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EL CALLAO'S managers continue to make discouraging statements. Mr. WEBBER, the present superintendent, is no more sanguine than was Mr. JENNINGS. In his annual report he says of the outlook that "no brilliant results can be expected from El Callao the ensuing [the present] year . . . While the appearance of the mine is more promising than it was at the beginning of 1889, the fact remains that the ore in sight is very low and is becoming more and more expensive to handle. . . This, coupled with the exploration work, which is most necessary for the future of the mine, makes the outlook rather insecure." Yet the annual report does not show very discouraging results for 1889. The yield was 56,389 tons, and the bullion produced was 52,973 ounces of gold, or nine-tenths of an ounce per ton. This was a shade better than the results in 1888, though far below the output of the best years. El Callao managed to pay 3,828,292 francs in dividends in 1889—which is doing pretty well for a mine that has been reported as nearly exhausted for several y ears.

"NEW" METHOD FOR TREATING GOLD ORES.

This time it is Mr. L. CHARD of St. Louis, who comes to the front with a process for getting out gold where other inventors cannot. It is hardly fair to criticise Mr. CHARD'S process without more definite information than is afforded by an English exchange which attempts a description of some experiments lately conducted in London, and which are cited as showing that a revolution is to be effected in the metallurgy of gold. We have been so often disappointed by similar announcements that we have little faith in them, and that credence is steadily dwindling as each new proposition appears. Mr. CHARD'S method appears to be a species of dry washing or air concentration, somewhat in the line of KROM'S system. Now there is no mystery about working refractory gold ores. If the metal is there, and there is enough of it, it is simply a question of profit and loss, with an outside limit of reduction cost of about $12 per ton for leaching, in most districts. Now, on the other hand, is there any insuperable obstacle offered by scarcity of water, provided, again, that the gold is present in sufficient quantity? Here the question is simply one of getting the water on the ground, and the dry places which are left unworked are generally those which would not stand a moderate preliminary outlay for ditches and flumes or pipes. As a matter of curiosity, we quote that portion of the account which comes nearest to a description:

"The machines, which are very simple in construction, pulverize the ores, concentrate, grade and separate the metals from the matrix by a dry process, without the use of mercury, chemicals or electricity, at a much cheaper cost than by any of the older methods of treatment, as it has been proved that a machine, capable of cleaning forty tons of ore in ten hours, can be worked by hand, mule or one horse engine with two unskilled laborers to supply the machine. The 'Tierra Seca' system subjects the pulverized ores to the action of currents of dry air, with the result that silicates and other worthless minerals are quickly separated from the concentrates. During the experiments referred to six pennyweights of gold dust, together with two small nuggets, were weighed out and mixed with 2 cwt. of sand and gravel, which was immediately run through one of the machines, and in less than a minute the nuggets and 97 per cent. of the gold dust were recovered in the presence of the visitors. A small machine for the use of prospectors was also exhibited; by its assistance it will be possible without water to test in a few minutes any samples of ore. This latter machine weighs under 6 pounds and is very compact."

THE SILVER FREE COINAGE QUESTION.

The free-coinage advocates carried things with a high hand in the Senate this week, and passed a free-coinage silver bill, the wicked Democrats helping the Republicans. This is probably only a trick of politics; the Republicans alone being held responsible, the Democrats are willing to push them into a "hole," just as the "Free Traders" desire to see the MCKINLEY bill passed and even its outrageous tariffs increased.

There is no certainty yet as to the outcome of the silver legislation. The passage of the free-coinage bill in the Senate rather lessens the prospect of any silver legislation this session. The market for bullion takes this view, for silver certificates have declined slightly since that free coinage victory.

The ill effects of the silver legislation now disturbing the country are evidenced by the custom house returns for this port. During the week ending June 19, the exports of gold from the port of New York amounted to $2,500,000, though the rate of exchange is below the exporting point, and apparently it is unprofitable to export gold. The exports of silver during May and June have amounted to only $568,467 and the imports to $2,302,358, while in the corresponding period in 1889 the exports of silver were $3,057,316 and the imports $186,925.

It seems therefore that the effect of our proposed silver policy has already led to the anticipated drain of gold, and influx of silver—if then the mere shadow of this policy produces already such results, what would the substance do? Our securities would be returned to us as long as gold could be obtained for them and silver would come in as long as its price in gold was kept up, the gold going out. In a very short space of time gold would be a luxury in this country; it would be hoarded and would quickly disappear from circulation and on all our foreign business we would have to pay tribute to the gold standard countries. Is this policy likely to induce them to join in a bimetallic agreement?

RECENT DISCOVERIES IN MAGNETISM—NICKEL-STEEL.

At the end of his presidential address before the London Institution of Electrical Engineers Dr. HOPKINSON says of the question which has puzzled so many, "Why do iron, nickel, and cobalt possess a property (strong magnetic susceptibility) which we find nowhere else in nature?" that, "so far as he knows, nothing that has ever been proposed even attempts to answer" it. To which the retiring president, Sir WILLIAM THOMSON, added that "it was really one of the marvels of nature that there should be three bodies differing so enormously from all others in a matter of such great importance as magnetic susceptibility."

While it would interest only the physicist to follow in detail the developments in magnetic theory and knowledge, some very striking facts have been lately brought forward which should interest all, though at first they seem to obscure rather than to lighten the question above stated.

It is now pretty widely known that iron suddenly ceases to be magnetic when heated to the critical point of its "recalescence" or "after-glow," and that if alloyed with some twelve per cent. of manganese, as in manganese-steel, it becomes almost completely non-magnetic. These facts

show us that iron is not necessarily magnetic under all conditions, for admixture with a small quantity of another metal, and even mere change of temperature, render it non-magnetic. Stranger still, some observers report that iron again becomes magnetic when the temperature reaches whiteness, but this lacks confirmation.

The behavior of nickel-steel is very remarkable. As usually received from the maker, nickel-steel with 25 per cent. of nickel is non-magnetic; and yet it is a mixture of two magnetic metals, iron and nickel. If, now, we cool this nickel-steel to — 20 degrees C (— 4 degrees F) it becomes very decidedly magnetic, and remains so when it again returns to the normal temperature. If, finally, we heat it, it remains magnetic till it reaches its critical temperature of 580 degrees C (1076 degrees F), when it again becomes non-magnetic, and remains so until again cooled to — 20 degrees C. In short, this nickel-steel may at the common temperature be either permanently magnetic or permanently non-magnetic as we please. We can at will make it permanently non-magnetic by heating it momentarily to 580 degrees C, and again cooling it: or permanently magnetic by cooling it temporarily to — 20 degrees C.

Nickel-steel has been recommended for ship-building because non-magnetic. But if the nickel-steel ship is to become magnetic suddenly and without a word of warning on cooling to —4 degrees F., sending its compasses spinning, its sphere of usefulness would be limited. For though this temperature is not reached during common ocean trips, yet vessels in port at New York, Boston or Halifax, on the Great Lakes and elsewhere, are occasionally exposed to it. Reheating the vessel to 1,076 degrees F. to unmagnetize it seems at first to present technical difficulties.

Now, not only does cooling to—4 degrees F. make 25 per cent. nickel-steel magnetic, but it changes it from soft to hard. Thus 25 per cent. nickel-steel which in its common non-magnetic state has 112,000 pounds tensi'e strength per square inch, and over 30 per cent. elongation, when rendered magnetic by cooling temporarily to —4 degrees F., and then again brought to the common temperature, has 190,000 pounds tensile strength and only 8 per cent. elongation. A particularly pleasant material that, to put into structures exposed to shock and to frost!

Finally, pull a bar of non-magnetic 25 per cent. nickel-steel apart tensilely, and, presto, its broken fragments are magnetic!

This, be it understood, is the behavior of 25 per cent. nickel-steel. It does not at all follow that, with other proportions of nickel, the same strange conduct will be found. Thus, with five per cent. of nickel, steel becomes non-magnetic when heated to about 800 degrees C. Like 25 per cent. nickel-steel, it remains non-magnetic when cooled somewhat below this temperature, regaining its magnetism at a decidedly lower temperature; but this lower temperature at which it again becomes magnetic, instead of being below zero, is somewhere about 650 degrees C

Again, it has become pretty well known that tungsten, itself unmagnetic, greatly increases the magnetism of steel; and now it turns out that it plays the same part with nickel, three per cent. of tungsten making nickel more strongly magnetic than the steel of which magnets were formerly made. Thus Mr. PREECE states that, while tungsten raises the magnetic induction of steel from 700 to 5,000, it raises that of nickel from 120 to 1,032.

AMERICAN FURNACE MATERIAL SHOULD BE SOLD ON AMERICAN ASSAY.

Our readers will remember that some three years ago we called attention to the sale of 3,000 tons of copper matte in England on Ledoux & Company's assay, which was practically the first transaction in furnace material in which the settlement was entirely based on American returns.

During the existence of the late "French Syndicate" all the product of the Montana mines (Anaconda excepted) and all the Arizona production were also sold on the same terms, and we have before predicted that this would at some time become the general system, and that the Cornish assay and methods of settlement would not much longer be accepted by the American producers. This prediction seems likely to be verified at an early day, as we are informed that one large exporting house has notified its English correspondents that hereafter it will buy and sell for export on New York assays only, and others will doubtless follow suit.

The present situation of the copper market, on the other side, warrants the assumption of this position, because once more England must look to America for its furnace supplies, after the exhaustion of the bankers, and other stocks in Europe. The high prices prevailing in our market render the sellers independent.

Some of our English friends have expressed themselves as being fearful of the result of business done on the American basis, but we feel sure that this is largely due to a lack of thorough understanding of our business methods on this side. The Cornish assayer does not pretend to give the "copper contents" of the sample but the "produce," which is a very different thing. He endeavors to imitate in his actual fire assay the various stages through which the material must be brought until it can be considered refined. This "produce" may vary from the actual percentage of copper in the sample to anywhere from 1 per cent. to 3 per cent. below, according to the material handled, and the skill of the assayer.

In America, on the other hand, the "copper contents" reported by the assayer is intended to be the total amount of copper that the sample contains, regardless of the method employed in the assay, and although the electrolytic assay is considered most accurate, when a sample is sent to an American assayer, he is generally not restricted to any method, but is expected to report the total percentage of copper, regardless of the composition of the material worked upon or metallurgical processes. As, however, it is not expected that the smelter will be able to extract from rebellious ores or other crude material, all the copper which it contains, the trade custom allows one and three-tenths units to be deducted in settlement from the American Assay. This deduction, taken as a broad average, is, of course, more than ample in refining bars, while perhaps in some ores it will hardly protect the buyer entirely.

The settlement on American weights is also undoubtedly an advantage to the seller, not only on account of the inevitable loss in handling and ocean shipment, but because of the different systems of weighing employed and the allowance for "draughtage," etc., in England. The experience of the past three years warrants the assertion that this loss in weight will be from one-half to one and one-half per cent., while the difference in assay will vary from an actual gain, in bars, to a loss of one-half unit on argentiferous mattes and one to two on ores. The allowance of 1·3 units is therefore quite ample to protect the English buyer in all ordinary transactions, excepting in certain ores, as English furnace practice should be quite equal to our own.

With these facts before them, our English friends can readily adjust their business to these conditions, making an allowance in the price, as is done on this side in buying, instead of deductions from the assay, as has been their custom. The difference against which our shippers of copper ore have so long had to contend in dealing with England, is not experienced on the Continent; the American system of assay is adopted both in France and Germany, and Continental assays and weights as frequently exceed the American returns as otherwise.

TRIANGULAR LODE-LOCATIONS AND IMAGINARY BOUNDARIES.

By Our Special Contributor.

DECISION OF A CASE INVOLVING PART OF THE DRUM LUMMON MINE IN MONTANA.

The case of the *Montana Company Limited* against *Clark et al.*, owners of the Hopeful lode-patent, tried last week before Judge Knowles, in the U. S. Circuit Court at Helena, Montana, involved rulings on one or two points of law which render it worthy of record. The result of the case, as affected by these rulings, is likely to be discouraging to the class of enterprises to which the Hopeful claim belonged, and *bona fide* mining operators will not be sorry for that.

It is a good many years since the Drum Lummon Mountain, at Marysville, Montana, was covered with mining locations. There are numerous fissure veins, traversing the granite nucleus and the surrounding slates of which that district is composed, but it may fairly be said that the Drum Lummon (including its branch or companion, the Castletown) is the only one on the mountain which has proved profitable. This property, now owned by the Montana Company, Limited, contains the famous, admirably managed, and steadily productive Drum Lummon mine.

No longer ago than January, 1888, a party of enterprising speculators located a mining claim upon a triangle which had been left vacant in the midst of the surveyed locations which covered all the rest of the surface. A barren fissure, supposed to be that of the Drum Lummon lode, crossed this triangle for a few feet; and upon this the Hopeful locators proceeded to sink an incline, which, at the depth of about 230 feet, had nearly broken into a level of the Drum Lummon mine, when it was checked by a bill of equity, begun by the Montana Company. The complaint alleged the ownership of the property invaded and threatened; the defence was the extra-lateral right attached to the Hopeful location.

But at an early stage of the case the court held that this location, being in the form of a triangle, could not possibly have any extra-lateral lode-rights; and this decision essentially destroyed the defence, leaving only the subordinate question as to the right of the complainant company to the remedy prayed for, namely, a perpetual injunction. That question was also decided ultimately in favor of the Montana Company, the injunction was granted, and the complete victory of the company is not likely to be questioned further.

The decision that a triangular location cannot acquire the extra lateral lode right was inevitable by reason of the explicit opinion of the Supreme Court in the Elgin case. In that case the Stone location, being a polygon, approaching a horseshoe in shape, was declared to convey no right to the lode outside its boundaries, because it had no parallel end-lines. A triangle presents a still stronger case, since, no matter what direction the apex of a lode may take, it cannot possibly cross two parallel boundaries of such a figure. In this respect, if the Stone claim was incurably defective, the Hopeful certainly was so, *a fortiori*.

But the ruling against the Hopeful claim was specially significant by reason of the circumstance that this was one of those locations which have been made nominally parallelograms by the device of "imaginary boundaries"—discussed by me in a recent paper before the Institute of Mining Engineers. That is to say, the locators caused a nearly rectangular figure to be surveyed, one of the end-lines of which was a true boundary of their claim, while the other end-line and both side-lines were drawn upon the surface of claims already located (and, in this case, patented; but that makes no difference). This survey was made the basis of an application for patent; but the application, after describing the exterior and imaginary boundaries, disclaimed that part of the surface included which already belonged to others; and the patent was issued for the whole parallelogram, saving and ex-

cepting the said disclaimed territory. This exception being subtracted left simply a slender isosceles triangle, having as a base one end-line of the exterior survey, and terminating at a point within that survey, and not on any of its boundaries. The question whether such a grant of X + Y — Y amounts to anything other than a grant of X simply, has never before been judicially determined. Strictly speaking, it was not determined in that precise form by Judge Knowles in the Hopeful case, for the patent itself was not put in evidence, and hence its grant was not directly construed. But the pleadings showed the facts, and the court ruled without hesitation that the location was a triangle pure and simple, for the reason that no valid location could be made except upon the public domain, and that the rights properly attached to a location on the public domain could not be enlarged by trespassing upon locations already withdrawn from it, in order to draw different boundaries.

This decision, as I have observed, will be highly satisfactory to the owners of mines. For one of the curses of mining titles has been the threatened invasion by junior locators upon "fractions" of ground which has been held and operated for years under the supposed protection of prior location. Triangular claims are invariably remnants, left after the *bona fide* explorers have laid out their locations to the best of their judgment, so as to cover the apexes of the located lodes. The destruction of the extra-lateral rights of triangular remnants injures only the pestiferous class of adventurers who have been accustomed to locate such claims as points of attack upon prosperous mines. Anything that dampens the zeal of such piratical speculators is a benefit to honest mining.

R. W. R.

NEW PUBLICATIONS.

THE LAW OF WAGES; THE RATE AND AMOUNT. By JOHN RICHARDS, San Francisco. The Industrial Publication Company. 54 pp. 25 cents.

The author of this little book claims to have been a practical workman, a director and employer of labor, and he takes issue with all the political economists from Adam Smith to Henry George, who have taught, what he calls an erroneous theory, that the rate of wages depends on supply and demand. He makes a distinction between the "amount of wages" and the "rate of wages," defining the former as that part of the cost of commodities that is paid for labor, and the latter as the rate per day, week or month paid to workmen for their services. He bases his arguments on four propositions, which he considers almost axiomatic. They are:

First—All manufactured articles are made up of three elements or components, namely, material, wages and expense.

Second—All staple articles of manufacture such as enter into the world's trade must have a nearly uniform or international value.

Third—The amount of wages entering into the cost of manufactured articles is also nearly uniform, irrespective of the rate of wages paid for their production.

Fourth—The rate of wages depends mainly upon what workmen produce, varying with efficiency of labor and cost of material and expense.

To establish the third and fourth propositions, which will be most generally disputed, he brings forward a number of isolated cases from cotton cloth manufacture, Chinese laundries, watch manufacture, farming operations, railway building, etc., and attempts to show that where the rate of wages is high, the labor cost of production is low, and vice versa. The facts in iron manufacture, at least, would not bear out fully these propositions, as in many branches, such as puddling, heating and rolling of wrought iron and steel, the workmen are paid by the ton and not by the day. In some parts in the United States the price per ton is 50 per cent. higher than in other parts, and over 100 per cent. higher than in England. The same difference in labor cost prevails in many other industries, so that it is impossible to prove as a general law, that when wages are high the cost of production is low.

He assumes also that because total cost is made up of the three elements, wages, material and expense, when material and expense are high, wages are necessarily low. He forgets that "material" itself, when it has any marketable value, is the product of labor, and that "expense" also is largely made up of labor items, so that when wages are high, material and expense also are high.

The book is plainly the work of an amateur in political economy, and while there are many good ideas in it, there are defects of superficial observation and reasoning which prevent the book as a whole from being of any practical value.

REPORT OF THE DIRECTOR OF THE MINT UPON THE PRODUCTION OF THE PRECIOUS METALS IN THE UNITED STATES DURING THE CALENDAR YEAR 1889. By EDWARD O. LEECH, Director of the Mint. Government Printing Office, Washington, D. C., 1890. Cloth, 8vo, 296 pp.

A brief abstract giving some of the principal production and coinage statistics, was published in the ENGINEERING AND MINING JOURNAL, May 3d, from advance sheets of this report. The complete report has now been issued and calls for further notice in view of the special interest which attaches at the present time to the statistics of the money metals on account of legislation pending in Congress.

We have heretofore called attention to the admirable character of Mr. Leech's statistical work. He has wisely omitted most of the descriptive matter which formerly overburdened the reports of Mr. Burchard, and, while bringing the volumes down to a reasonable size and the information into convenient shape, has succeeded in eliminating the uncertain, erroneous and unnecessary rubbish which encumbered the older reports. On the other hand, the reports are slightly fuller than those of the last director, Dr. Kimball, though they follow the general outlines established by that officer. The brief test accompanying the statistics proper, serves to make them clearer. In the special reports on the production of individual States and Territories there is, however, some unevenness both as to method and proportion, which might have been avoided to the general advantage of the report. Notwithstanding this slight want of "balance," the report is a good model for similar publications of the bureau in the future.

As to the production by States and Territories in 1889, we refer to the ENGINEERING AND MINING JOURNAL May 31. Mr. Leech after publishing the actual returns and estimates, gives the statistics of coinage, exports and imports and estimates of the amount of gold and silver consumed in the industrial arts. It appears that during the year there was a net loss of nearly $39,000,000 gold and $15,000,000 silver (excess of exports over imports). There was a slightly increased use of the precious metals in the arts, as compared with the preceding year—gold, $13,623,935, against $13,324,025 in 1888; silver, $8,569,318, against $7,908,148 in 1888. Of course, ultimately much of this metal is recovered and either enters into circulation as coin, or is made over into other forms, of jewelry, etc.

It may be of interest to note the stock of money metals held in this country.

OFFICIAL TABLE OF STOCK OF COIN IN THE UNITED STATES, JANUARY 1ST, 1890.

	Gold.	Silver.	Total.
Estimated stock of coin January 1st, 1889	$607,605,686	$392,161,422	$999,767,108
Coinage, calendar year 1889	21,413,931	35,496,683	56,910,614
Net imports of United States coin, calendar year 1889	.....	62,798	62,798
Total	629,019,617	427,720,903	1,056,740,520
Loss:			
Net exports of United States coin calendar year 1889	2,848,276	....	2,848,276
United States coin, melted for recoinage, calendar year 1889	662,278	758,674	1,420 952
United States coin estimated to have been used in the arts, calendar year 1889	3,500,000	200,000	3,700,000
Total	7,010,554	958,371	7,969,228
Estimated stock of United States coin January 1st, 1890	$622,009,063	$426,762,(2)	$1,048,771,292

In addition to the coin, the mints and assay offices held the following amounts of bullion: Gold, $67,265,944; silver (cost), $11,626,395. Adding the bullion to the coin, the total metallic stock of the United States January 1, 1890, was as follows: Gold, $689,275,007; silver, $438,388,624; total, $1,127,663,631.

The estimated metallic stock at the commencement of the calendar year 1889 was as follows: Gold, $705,061,975; silver, $403,516,756; total, $1,108,578,731.

From a comparison of these totals it will be seen that the stock of gold in the United States was reduced during the last calendar year $15,786,968, while the stock of silver was increased $34,871,868.

The reduction in the stock of gold is worthy of note for the reason that, since 1875, there has been an uninterrupted accumulation of gold in the United States, and the past year is the first to note a diminution.

But, besides the precious metal held by the Treasury and in the mints and assay offices, there is also a large holding in national and other banks. Thus, as to gold, the following comparison is presented:

METALLIC STOCK, JANUARY 1, 1890 (OFFICIAL TABLES).

United States gold coin	$622,009,063
Gold bullion in mints and assay offices	67,265,944
Total estimated metallic stock	$689,275,007

VISIBLE STOCK.

In United States Treasury and branches:	
Gold coin	$246,401,951
Gold bullion	67,265,944
In national banks	71,910,467
In other banks	34,000,000
Total visible stock	$419,578,362

From this it will be seen that the excess of our gold coin estimated to be in the United States above the *visible* stock, was $269,696,645.

Part II. of the report contains chapters by the agents of the bureau on the condition of mining in the several States and Territories. Mr. W. H. Dimond, the superintendent of the San Francisco Mint, contributes the chapters on Alaska, California, Oregon and Washington; Mr. John F. Blandy, on Arizona; Mr. M. E. Smith, on Colorado; Prof. G. E. Bailey, on South Dakota; Mr. J. W. Cunningham, on Idaho; Mr. S. Braden, on Montana; Mr. S. C. Wright, on Nevada; Mr. W. C. Hadley, on New Mexico; Mr. F. N. Holbrook, on Texas; Mr. A. Hanauer, on Utah; and Mr. S. W. Cramer, on the mines of the Appalachian region. The California report is supplemented by a communication from Mr. C. G. Yale, of the *Mining and Scientific Press*. Part III. contains miscellaneous statistics, including operations of the mints, exports and imports, silver quotations, etc. Altogether, the book is a very handy work of reference for all who have occasion to study the statistics of the money metals.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.]

Bankers and Brokers' Reference Book. A Bird's-eye View of the Financial Field Investment Securities. By Alfred Smith. Published by the American News Company, New York, 1890. Pages 60.

Geological Survey of New Jersey, Annual Report of the State Geologist for 1889. Published by the State, 1889. Pages 112.

Gibbs' Route and Reference Book of the United States and Canada (with maps). Published by Gibbs Bros. & Moran, New York, 1890. Pages 251. Price $5.

The Strains in Framed Structures, by A. Jay Du Bois, C. E., Ph. D. Published by John Wiley & Sons, New York, 1890. Pages, 518. Illustrated. Price, $10.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

All letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Warne Process for the Reduction of Rebellious Ores.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR—Can you or any of your readers inform me where Warne's new process for the reduction of rebellious and refractory ores is in operation, and with whom I should correspond to obtain information upon the subject?

"WIDE AWAKE."

BRICK STREET PAVEMENTS.

Written for the Engineering and Mining Journal by William Kent.

An important recent improvement in the art of paving streets is the use of a peculiar kind of hard-burned bricks instead of paving stones. Several streets in Burlington, Iowa, Quincy, Ill., and other Western cities have been paved with the bricks, and the results have been very satisfactory. Mr. Edgar Ryan, of the University of Michigan, has written a thesis upon the subject, a condensation of which is published in the Michigan Engineers' Annual, from which we take the following:

Bricks fit for paving are quite different from common bricks. Clay for such bricks should be able without fusing to withstand a sufficient degree of heat and for a long time to render the bricks hard and impervious to water. Lime, magnesia and the alkalis in the clay render it fusible, and they are to be avoided. Iron, beyond 6 to 10 per cent., if the clay is silicious, also renders it fusible. Silica and alumina constitute the refractory parts of brick, and the other elements named the fluxing part. The characteristics of all fire clays are that they do not effervesce with acids; that they make a paste with water, which paste can be drawn out without breaking, and is very plastic; that, when dry, they are solid and break into scales when struck; and that they have a soapy feeling, are easily scratched or polished, and can be cut into long ribbons with a knife, and appear somewhat like horn. The commercial test is the only way of ascertaining the value of a clay.

The Mingo fire clay, from Haydenville, Ohio, from which the Hayden patent paving block is made, has nearly the compactness and density of fine-grained sandstone, and yet is semi-plastic. The paving block in burning is subjected for ten days to 2,000 degrees Fahrenheit. This block is 5⅛ inches square by 4¼ inches thick, hollow below, to facilitate burning and save material, and having its upper surface broken by indentations intended to provide a firm foothold for horses. These indentations, however, are soon obliterated under heavy traffic. The blocks are salt-glazed. The outer top edges are slightly beveled, to admit readily a filling of sand, pitch or other material in the joints after laying. One thousand blocks will lay 26 square yards, at 50 cents per hundred, or 19·2 cents per square yard. An analysis of the clay is subjoined, compared with the well-known Stourbridge clay of England:

England.	Mingo fire clay.	Stourbridge fire clay.
Silica	72·24 per cent.	73·82 per cent.
Alumina	16·87 "	15·88 "
Iron	0·16 "	2·95 "
Lime	0·50 "	trace "
Magnesia	trace "	trace "
Alkali	1·09 "	0·90 "
Water	5·44 "	6·45 "
	100·00 "	100·00 "

The paving brick clay of Virden, Ill., is compact, with a distinct cylindrical cleavage, of a light steel-gray color, and emits when first mined a characteristic odor of slate. A piece kept at a white heat in a hard coal fire for several hours was not disintegrated, and concentrated nitric acid failed to produce any effervescent.

The different varieties of clay for paving blocks are mined at Bloomington, Ill. One of these burns to a grayish red color, the second from pink to cream color, and the third to chalk white.

From the experience of the best manufacturers of paving brick, it is concluded that fineness of grain is most essential. When fine-grained clay has a hard compact structure no pains should be spared to reduce it in a dry state to an impalpable powder. Where the clay is neither dry nor fine, but of desired composition, it may be calcined and then finely ground. The great diversity in the clays makes the process of manufacture a difficult problem, for the experience gained in one place may be of little or no use in another.

Paving bricks are made at Ottawa, Virden and Bloomington, Ill.; Empire, O.; New Brighton, Pa., and Wheeling, W. Va. In the last place the bricks are made from clay and iron slag.

The bricks made at Virden are 8⅛ × 4¼ × 2 inches. Different colors and qualities come from the same kiln. They are quoted at $8 per thousand on board cars.

At Bloomington the bricks are grayish red in color, and are quoted at $8 50 per thousand at the yards, or furnished in sufficient quantities to lay two courses, one flat and the other on edge, for $1.12½ per square yard.

The Ottawa bricks are dark gray in color, very hard, and cannot be cut with ordinary tools. They are of two dimensions, 4 × 5 × 12 inches, quoted at $1 per square yard, which is about $35 per thousand, and 4 × 4 × 12 inches at 75 cents per square yard, or about $28 per thousand.

At Empire, Ohio, the bricks are hard, ring like steel, and are quoted at $10 per thousand.

A number of tests were made upon Bloomington, Virden and Hayden blocks, with the results given below. The specimens for crushing tests were all ¾ × ¾ inches by 1½ inches placed on end, between pieces of soft pine, about ¼ inch thick. All were ground to true size on an emery-wheel and grindstone.

	Specific gravity.	Per cent. absorption 3 days.	5 days.	10 days.	Crushing strength, lbs. per square inch.
Bloomington A	2·185	3·79	3·92	4.06	10,120 min. 12,920 max.
" B	2·305	3·18	3·19	3·37	9,893
" C	2·227	1·87	2·20	2·70	9,386
Virden A	2·317	3·10	3·12	3·82	9,361 min. 10,000 max.
" B	2·415	7·67	7·96	8·71	9,173
" C	2·360	7·11	7·48	8·70	8,862
Hayden paving block	2·286	3·25	3·38	3·64	....

For comparison, the following tests of common building brick are given. Results in pounds per square inch:

GOOD AVERAGE HAVERSTRAW BRICK, TESTED BY MR. ABBOT.

	Maximum.	Minimum.	Mean.
Whole brick on end	3,080	1,600	2,065
Half brick on flat side	4,153	2,669	3,371
" " " small side	6,400	2,900	4,612

EXPERIMENTS BY PROF. PIKE, MINNEAPOLIS, MINN.

St. Louis, Mo., brick, flatwise, 6,417 pounds; edgewise, 4,080 pounds.
Hastings red brick, hard, 2,017 pounds; medium, 2,012 pounds; soft, 1,743 pounds.

Paving bricks are sometimes laid on a foundation of broken stone covered with cement mortar, and sometimes on sand.

In St. Louis, ten years ago, strips of pavement 22 inches wide were laid down as a test, and a two-wheeled cart with tires 2½ inches wide, and loaded to two tons, was rolled back and forth by machinery. The average traffic in business streets at St. Louis at that time was 35 tons per day per foot of width, and estimating one-third of this as the effect of horses' shoes, 50 tons per foot was taken as the standard. The samples were weighed before and after testing, and were subjected to an amount of travel by the above cart equivalent to 8½ years on the street. The total abrasion of the brick was nine per cent., or a depth of three-quarters of an inch, but about one-half of the bricks was broken. Asphaltum blocks wore 14 per cent., and but one was broken. Granite blocks had scarcely worn appreciably, while limestone had lost 10 per cent. As a result, granite blocks were chosen for streets having heavy traffic, but the tests seem to warrant the claim that brick pavements will answer well for moderate and light traffic.

At Nashville, Tenn., are used cresoted or bituminized bricks prepared by saturating common kiln bricks of medium hardness, under a high degree of heat, with liquid pitch, obtained by distilling coal tar. These bricks have been laid about four years. They have been subjected to a considerable amount of traffic, and show very little, if any, wear. The cost was $1.80 per yard for brick and laying on finished foundation.

At Youngstown, Ohio, fire brick on cement concrete base and sand with pitch in joints cost for all $1.73 per square yard. The bricks came from Empire, Ohio, and New Brighton, Pa.

At Allegheny, Pa., fire clay bricks from the West Virginia Fire Brick Company have been laid in two layers on rammed and rolled gravel and sand, at a cost of $1.95 per square yard, exclusive of grading. The pavement, in use three years, is said to be very smooth, easily cleaned, and of handsome appearance.

At Bloomington, Ill., some two and a half miles of brick paved streets have been laid. The entire pavement, two layers of brick including all materials, grading and stone curbs, cost $2 per square yard, with laborers at $1.60 per day, teams $3.25, and sand 80 to 90 cents per cubic yard, delivered. Some of the pavements have been in use for twelve years, and they are preferred above stone blocks, Nicholson, and Macadam, on the score of cost, durability, lack of noise, home production, ease of cleaning and repairs.

Jacksonville, Ill., has over three miles of pavement of Virden brick, some of it down for five years and still in good condition. Cost, including everything, $1.92 per square yard.

Cincinnati had a pavement on rolled sand which was a failure. An experiment was made with Hayden blocks under heavy traffic in Chicago, which also failed.

The disadvantages of brick pavements arise from lack of uniformity in the material, and the liability of incorporating in the pavement brick of too soft and porous structure, which crumble the first winter under action of frost. When laid on a solid foundation, the advantages are cheapness, smoothness, cleanliness, freedom from noise, and sanitary excellence.

Taking all things into consideration, it is superior to Macadam, wood, and, for a maximum traffic of three tons, superior to granite.

HAASE'S SYSTEM OF SINKING THROUGH QUICKSANDS.*

The management of the Guenin Colliery, Cottbus mining district, Germany, while sinking a pump shaft to a depth of 87 feet through quicksand, recently employed the Haase system, the chief feature of which consists in driving down a series of wrought-iron tubes, side by side, so as to form a cribbing for the intended shaft.

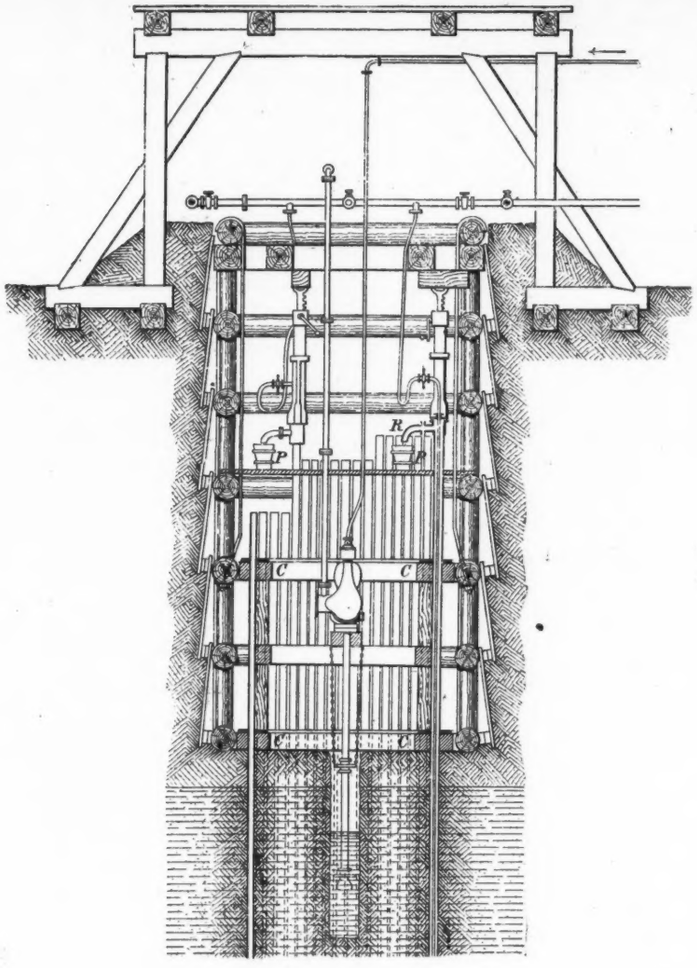
The tubes are 13·1 feet long with an internal diameter of 4·1 inches and 0·2 inches thick. Wooden guides with cast-iron cross bars at the top and bottom are attached to the timbering of the shaft so as to secure that the tubes take the required direction in their downward course. Six sets of the tubes were used to reach the coal seam. The shaft was 10·8 feet by 8.5 feet within the ordinary timbering, and 9·5 feet by 7·2 feet within the tubular lining and required 64 tubes altogether. The cost at 4 marks = $1, was as follows:

Sets of tubes.	Time occupied in driving.	Wages, including two engineers.	Length of tubes inserted, meters.	Cost per foot of tubes inserted.
1	May 24–June 8 (1889)	$108.10	209.96	$0.51½
2	June 9–June 22	93.76	237.81	0.39½
3	June 23–July 7	91.68	242.57	0.37¾
4	July 8–Aug. 13	167.93	236.84	0.71
5	Aug. 14–Sept. 18	195.06	243.28	0.80¼
6	Sept. 19–Oct. 25	182.93	183 58	0.99¾
	Total	$839.46	1,354.04	$0.62
	Two officials	269.30		
	Cost of 4,724 ft. of tubes and tools	8,380.37		
	Coal for boilers	1,023.70		
	Total cost	$10,512.83	1,354.04	$7.76¼

The removal of the sand caused no deviation of the tubes, and the drainage through the tube-wall proved satisfactory.

New Method of Handling Pig Iron.—Mr. Jerome L. Boyer, of Reading, Pa., Superintendent of the Chestnut Hill Furnaces, has brought out an ingenious apparatus to dispense with hand labor in removing pig iron from the pig beds. The apparatus consists of two grappling devices, of four hooks each, suspended from trolleys running on a traveling carriage which spans the cast house and commands all the pig beds. The grapples are worked by steam pistons. A man and a boy are all the operating force required. The grapples take up several pigs at once, and can remove the iron as soon as it is cool enough to retain its shape.

* Zts. f. das Berg, Hutten u. Salinenwesen.



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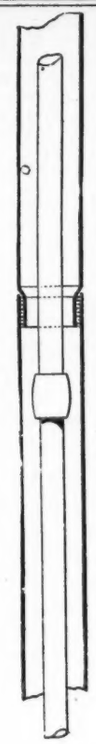

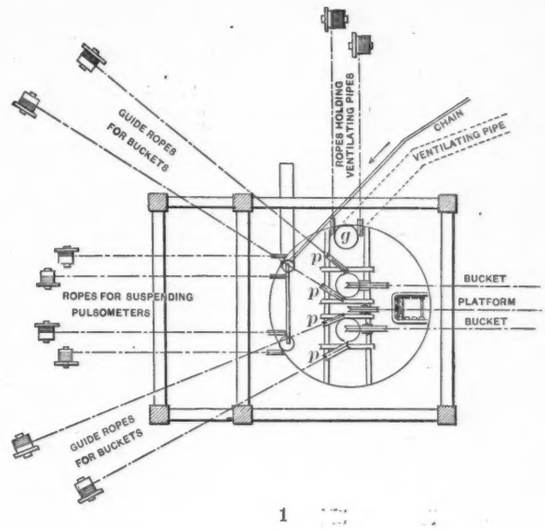

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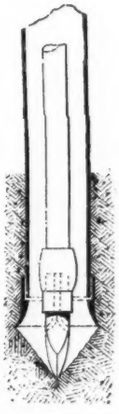

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ELECTRO-DEPOSITION OF PLATINUM.*

The permanence and unalterability of platinum have naturally suggested its application as a protective covering on other metals; but the difficulties to overcome have hitherto proved practically, or at least commercially, unsurmountable.

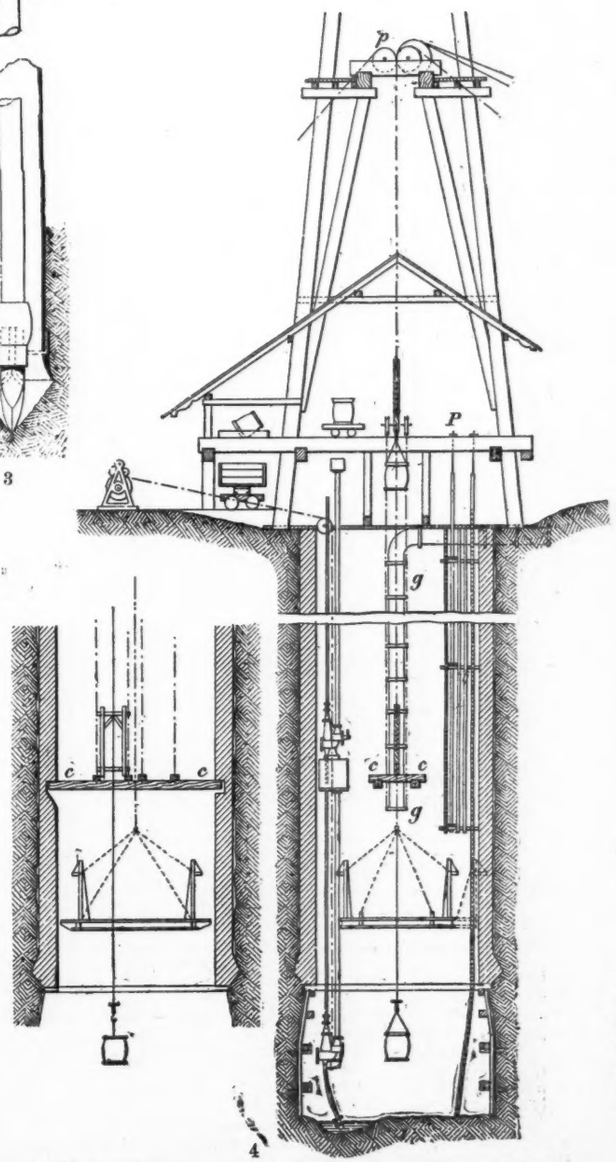
Of the methods proposed for electro-plating with platinum, the following three deserve notice: the Roseleur-Lanoux method, based on the electrolysis of a solution of the double phosphate of sodium and platinum; the Bright Platinum Plating Company's, London, which modifies the former by introducing into the bath certain substances, such as sodium chloride and borax, to insure a bright deposit of the metal; and Boettger's method, founded on the electrolysis of a solution of the double chloride of ammonium and platinum in sodium citrate. Each of these baths will yield satisfactory results for a time; but the chemical integrity of these electrolytes are not maintained, so that they soon become inoperative by reason of contamination with the secondary products formed therein.

The first difficulty is that of obtaining a bright, reguline and adherent deposit of the metal, in which form only it will answer the demands of practice. The metal separates readily from solutions of almost any of its compounds. Zinc, iron and tin reduce it promptly by simple immersion, but it has an obstinate disposition to separate from many of its compounds in the condition of platinum black, lacking coherence and adherence, and therefore entirely unsuited for electro-plating.

A no less serious difficulty arises from the insolubility of plates or sheets of this metal as anodes, when solutions containing platinum salts are submitted to electrolysis. In electro-plating with copper, silver, gold and nickel this causes in practice but little difficulty, since anodes of these metals are freely soluble in many solutions capable of depositing them when they are submitted to electrolysis, and the rate at which these anodes are respectively dissolved approximates so nearly to that at which the metals are deposited upon the objects at the cathode that the metallic strength of the electrolyte is maintained substantially uniform without requiring additions of metallic salts. The electro-deposition of the metals whose anodes are thus tractable is carried on industrially with success.

This want of solubility of the anode, in the case of platinum, continually weakens the metallic strength of the electrolyte employed while the deposition of the metal is going on, thus modifying the conductivity of the bath. This change influences also the deposited metal so as to necessitate fresh additions of metallic salt. All the processes known, save that of Boettger, use for this purpose the tetra-chloride of platinum. With that exception, all the solutions for the electro-deposition of platinum are made by treating the chloride with compounds of the alkalies, soda.

*Abstract of a paper read by Dr. Wm. H. Wahl at the meeting of the Chemical Section of the Franklin Institute, May 20th, 1890.



4

HAASE'S SYSTEM OF SHAFT SINKING THROUGH QUICKSAND.,

dotassa and ammonia, specially the phosphates and oxalates of soda, or dotassa. The resulting substance is commonly a double salt, such as the double phosphate of sodium and platinum, the double oxalate of potassium and platinum, etc., contaminated, however, in each case by the chloride of the alkali employed, which is formed from the decomposition of the platinic chloride. The bath is strengthened by fresh additions of platinic chloride, which yields more alkaline chloride until the bath, surcharged with this foreign substance and other secondary products of electrolytic decomposition, ceases to yield bright, reguline platinum and must be discarded. The platinum in the discarded bath must be regained, and may be converted into chloride and utilized in a fresh bath. Boettger purposes to maintain his bath by fresh additions of his original solutions, but the continued electrolysis of his solution must apparently be attended with the constant accumulation of alkaline chlorides from the same causes as above. It is this rapid deterioration of the baths which principally accounts for the narrow limits of electro-plating with platinum on a commercial scale.

Availing himself of the influence of extent of surface in promoting the solubility of substances, Mr. Wahl exhibited the platinum at the anode in the form of platinum-black, or sponge, exposing thus an enormously greater number of points to the attack of the electro-negative element or acid radical there set free. In his experiment a plate of porous battery carbon, treated with boiling hydrochloric and nitric acids, was repeatedly saturated with a solution of platinic chloride and dried. It was then introduced into a graphite crucible, finely divided carbon was packed about it, and the crucible and contents heated for about half an hour to bright redness. The carbon plate then contained within its pores platinum in a state of eminently fine division. Treatment with water, and with hydrochloric acid at boiling temperature failed to leach out any platinum salt, showing that the previous treatment had reduced all the platinum salt to the metallic state. The carbon plate was then suspended as the anode in moderately hydrochloric acid, a platinum plate serving as the cathode. The acid bath was gently heated, and a current of moderate strength was allowed to flow through it. There was a liberal evolution of hydrogen from the cathode, but little perceptible evolution from the anode. The acid solution gradually became colored from the formation of platinic chloride, and after some time the bright surface of the cathode began to blacken and became ultimately covered with a thick coating of platinum black.

It was thus demonstrated that an anode of platinum in a state of fine division readily solves in an electrolyte, which yields chlorine at the anode, when the same is electrolyzed. This observation had no practical value since the solution of the anode demanded the presence of a large proportion of free acid in the plating-bath and the use of currents of such strength as to produce invariably the deposition on the surfaces to be plated, of black and non-adherent metal. Furthermore, the physical condition of the anode exerted no influence whatever in the electrolysis of baths formed of the oxy-salts of platinum from which the best results in electro-plating are obtained—since, in electrolyzing such compounds, the acid radical, separated upon the surface of the platinum black, failed to exert any perceptible solvent action.

The plan which Dr. Wahl finally devised employs platinum hydroxide to maintain the metallic strength of the plating bath. For this purpose the hydroxide, readily soluble in alkalies and in many of the acids, may be introduced into the plating bath from time to time, and dissolved therein by stirring, or it may be permitted to remain in the bath in excess, the undissolved portion remaining at the bottom of the containing vessel, or it may be suspended in a canvas bag near the anode of carbon, according as the nature of the electrolyte may indicate one or the other method to be preferable. As the solutions which yield the best results in plating are those of the oxygen salts, these are also advantageously prepared directly from the hydroxide. This method yields a number of electrolytic baths of platinum that will maintain their metallic strength approximately unimpaired during electrolysis.

The platinic is readily soluble in aqueous solutions of the alkaline hydrates, and in a number of acids, mineral and vegetable. In its treatment with aqueous solutions of the alkaline hydrates, the former plays the part of a weak acid forming compounds known as platinates, which are very soluble, and from which the platinum is not precipitated on the addition of an excess of alkali. A weak aqueous solution of sodic or specially potassic hydrate will dissolve a large quantity of platinic hydrate, at the ordinary temperature, though solution takes place more freely when heat is applied. These solutions are freely conductive of electricity, and yield bright, reguline and adherent electro-deposits of platinum on metallic surfaces prepared to accept the same. Furthermore, with a current of moderate strength, the platinic hydrate only is affected, as is shown by the pronounced evolution of oxygen at the anode and by the total absence of gas at the cathode. Also, it is manifest from the free solubility of platinic hydrate in alkaline hydrate, even in the cold, that if free platinic hydrate be present in a bath of alkaline platinate, the alkali set free in the process of electrolysis will combine with this platinic hydrate to form fresh platinate. For this purpose, it will be necessary either to have present in the bath at all times a small excess of platinic hydrate which may remain upon the bottom of the containing vessel, without interference with the plating, and which may be replenished from time to time: or, to introduce at the end of the day's work, a quantity of the platinic hydrate sufficient to restore the metallic strength of the bath to normal, assisting the solution of the metallic hydrate by stirring, and if necessary by the application of gentle heat. As the platinate solutions act best when they contain a considerable excess of free alkaline hydrate, being more conductive of the current and yielding the platinum more freely and in the best condition, the addition of the proper quantity of platinic hydrate at the close of the day's work in the case of a bath of considerable volume, or the addition of small quantities at intervals, in the case of a small bath, will be found to answer the desired purpose of maintaining the metallic strength of the bath approximately normal for an indefinite period. In a bath where considerable free alkali is present, the platinic hydrate, added as just indicated, dissolves very freely even in the cold. The important fact is that the alkaline platinate solutions may be maintained and operated for a long time in the manner described, since no deleterious secondary products are formed by electrolysis to vitiate and render them inoperative. The mineral acids (hydrochloric, nitric, sulphuric, and phosphoric acids) dissolved the hydroxide freely, as likewise do certain of the vegetable acids, notably oxalic acid, and form with corresponding salts of the alkalies double salts, many of which are soluble in water. Of the salts thus capable of being formed, however, only a limited number is adopted to yield a deposit of bright, reguline and adherent platinum. The halogen compounds, more conveniently prepared, yield far inferior results.

Of the salts that may be formed from platinic hydrate by solution in acids, and in part by suitable combination with the corresponding alkaline compounds to form double salts, three only yield practically valuable results in plating, *i. e.*, the phosphates, oxalates and acetates, of which also it is practicable to form double salts with the alkalies, soda, potassa and ammonia, which yield bright, reguline and adherent plating.

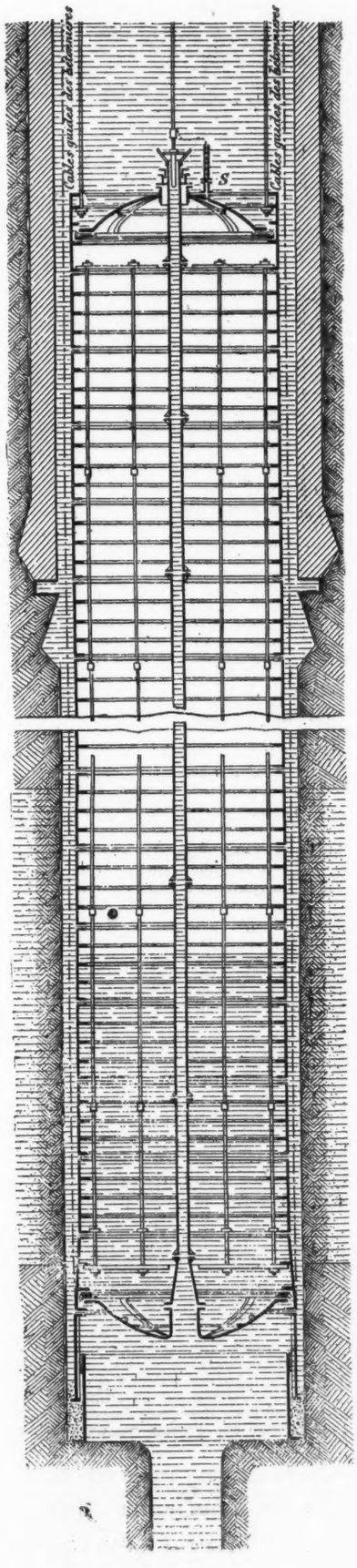
Oxalic acid seems, of all the oxygen acids, to be the best solvent of platinic hydrate, dissolving it even in the cold, but with great energy when aided by heat, and forming platinous oxalate with evolution of carbonic anhydride. From this brownish-black or deep blue solution, according to concentration, brilliant reddish-brown scales of the salt separate abundantly and readily from the hot saturated solution. A saturated aqueous solution of the simple oxalate, prepared from the above described hydrate, yields bright, reguline, adherent platinum when electrolyzed with a comparatively weak current, with evolution of carbonic anhydride at the anode. With a stronger current hydrogen also appears at the cathode. This bath may be maintained indefinitely at normal metallic strength by various devices, the most advantageous of which consists in making a supply of platinous oxalate from platinic hydrate in the way previously described, and keeping an excess of this present in the bath at all times. This bath has the same advantage as the above alkaline platinate baths.

Phosphoric acid also is a solvent of platinic hydrate. A dilute aqueous solution of this acid will dissolve a small quantity of the metallic hydrate in the cold and a much larger quantity when aided by heat. With increasing concentration the solvent power of this acid for platinic hydrate is correspondingly increased. The resulting solution of phosphate of platinum will, according to the degree of concentration, be wine-yellow to cherry-red in color and with a comparatively weak current yield bright, reguline and adherent platinum on properly prepared metallic surfaces. The electrolysis of this compound also does not involve the formation of deleterious secondary products, the metal separating at the cathode and the acid radical at the anode, and the elements of water evolving respectively from anode and cathode. The bath will, therefore, become more and more acid as the metal is withdrawn by the accumulation therein of the phosphoric acid set free at the anode. The metallic strength of the bath will, therefore, be maintained as in the foregoing cases by the constant presence therein of a small quantity of platinic hydrate or by the addition, at the end of each day's work, of the quantity of metallic hydrate required to restore the amount of metal withdrawn. This bath must be worked very acid, and the solution of the platinic hydrate facilitated by heating, as the solvent power of phosphoric acid for platinic hydrate is much inferior to that of oxalic acid. The double phosphates of platinum with certain of the alkalies may be formed, capable of yielding a deposit of bright, reguline and adherent metal, and of being maintained approximately at normal metallic strength in the same manner as set forth above. The best results were obtained with the ammonio-platinic phosphate, prepared by adding to the solution of platinic hydrate in phosphoric acid sufficient aqua ammoniæ to cause the same to give an alkaline reaction, which point will be indicated by the formation of a grayish precipitate that will not disappear on stirring; then restoring the acidity of the solution by adding free phosphoric acid in excess, upon which the precipitate readily dissolves. The resulting solution is yellowish or brownish, and yields superb plating; though it is not so well adapted as the oxalate for electro-deposition on a large scale. The sodio-platinic phosphate, formed in a manner analogous to the ammonia compound just described, will also yield bright, reguline and adherent plating; but the soda salt is less freely soluble than the corresponding ammonia compound, and consequently not so fit to maintain a normal metallic strength.

Platinic hydrate is only very sparingly soluble in strong acetic acid, and it is impracticable to facilitate the solution by boiling, since thereby the hydrate is soon decomposed and black platinic oxide is formed, which is quite insoluble in this menstruum. An alkaline acetate bath may, however, be prepared by the addition to the alkaline platinates above described of as much acetic acid as may be introduced without causing the formation of a permanent precipitate. But the bath does not meet the requirements in respect of indefinite maintenance in normal metallic strength and uniform composition. As the bath is made more strongly alkaline, it approximates, however, more and more closely to the alkaline platinates; for in the presence of a large amount of free alkali, this would unite with the acetic acid to form a simple acetate. The resulting solution would no longer contain sodio-(potassio-) platinic acetate, but sodic (potassic) acetate, sodic (potassic) platinate, and free alkali. Nevertheless, the presence of acetic acid in such alkaline bath appears favorably to influence the quality of the plating yielded, giving the deposited metal a whiteness approaching that of silver, and furthermore, acetic acid yields only the elements of water and volatile compounds when electrolyzed, and therefore does not contaminate the electrolytic bath by forming deleterious secondary products.

Delta Metal Uses.—In consequence of conclusive experiments made at the arms factory in Châtellerault, the French minister of war has authorized the use of Delta metal for hilt plates on officers' swords.

A Railroad in the Transvaal.—The lack of railroads in the Transvaal has for a long time been a great drawback for the development of the country, transportation by ox teams last year being estimated to have cost 7 million dollars in excess of what it would have been by rail. But now at last, the outlook bids fair to relieve industrial enterprise of this large tax. President Kruger drafted lately a bill for the construction of a railroad from Pretoria to the Vaal river which the Volksraad defeated on the 28th ult. Mr. Kruger, whose superior capability hardly can as dispensed with in the presidential chair, then sent in his resignation, be he would have no share in the responsibility for the rejection of the law, and declared this resolution irrevocable unless the Volksraad reconsidered and voted for the bill. This threat was effective; the diet submitted and sanctioned the building of the railroad.



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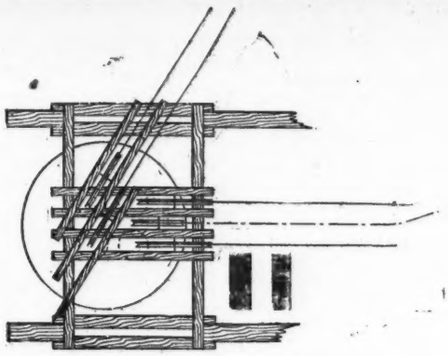

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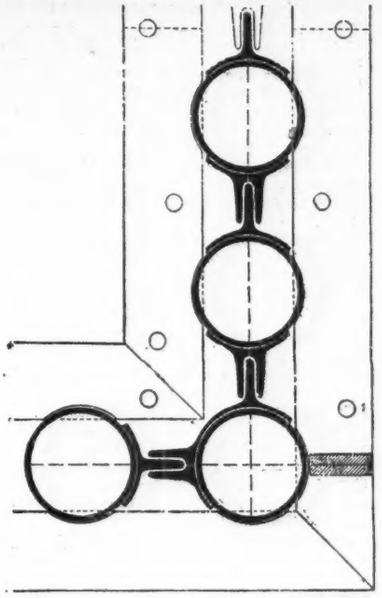

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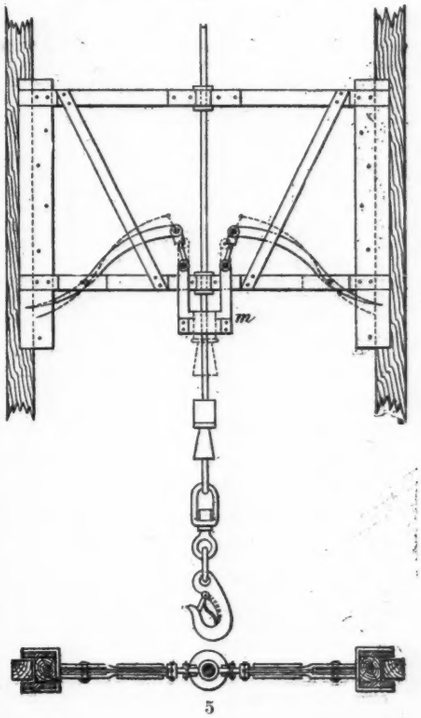

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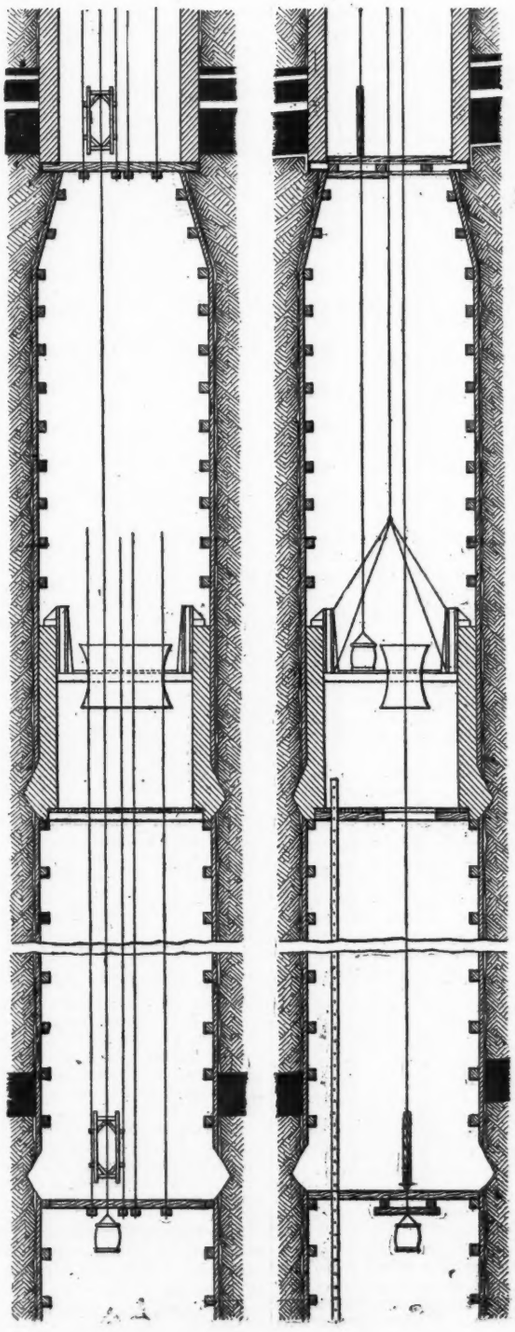
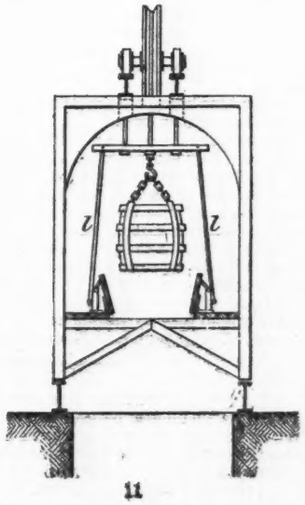




11

HAASE'S SYSTEM OF SHAFT SINKING THROUGH QUICKSAND.

METALLURICAL USE OF FLUORSPAR.*

By Dr. Foehr.

Fluorspar was, until the commencement of this century, considered an indispensable flux; it diminishes the loss of metal and was then the only energetic means to reduce the melting point of slag from ores carrying a high percentage of clay and zinc. Without fluorspar very refractory ores could not be smelted at all.

Gradually, however, as the blast furnaces and smelting apparatus were improved, fluorspar was superseded by lime and other cheap fluxes, but of late its use has been reintroduced into nearly all branches of metallurgy.

While fluorspar is regarded as a mere means to unite with excessive silicic acid, the possibility of its adoption is surprising, in view of the fact that the cost of fluorspar is six to seven times greater than that of limestone whilst the formulas for fluorspar and limestone respectively

$$2CaF_2 + 3SiO_2 = 2CaSiO_3 + SiF_4 \text{ and}$$
$$3CaCO_3 + 3SiO_2 = 3CaSiO_3 + 3CO_2$$

show that the quantitative economy in fluxing with fluorspar compared with limestone is as 156 to 300. The fact is, however, that one part of fluorspar goes further than 10 parts of limestone. The former is specially effective in reducing the quantity of fuel; it forms two parts of slag where limestone forms three, and it forms possibly also fluorsilicate, whereby heat is likely to be liberated.

While the rather high price of fluorspar prevents its use in the production of ordinary white and gray pig iron, it has proved a rapid and energetic solvent in blast-furnace work, where it is blown in as powder through the nozzles.

In making silicon iron, fluorspar plays a more important part. A ferrosilicon iron, with 10 per cent. silicon, made specially in Upper Silesia, is almost indispensable for works that make very tough, deep gray castings. This ferrosilicon can be obtained in any ordinary blast furnace from any silicious iron ore if it is only fluxed with fluorspar and the slag is strongly basic. The fluorspar reduces the silicon energetically; at all events fluorsilicon is formed which is reduced to silicon by the hydrogen contained in the furnace gases, and possibly also directly by the coke. It does not seem impossible that the greatly increased price for coke will result in a reintroduction of fluorspar as a fuel-saving flux in the manufacture of foundry pig, particularly as even a very small quantity of fluorspar, added to the charge, at once raises the product to No 1. deep gray pig, rich in graphite.

The remarkable property of fluorspar, that it facilitates the reduction of the most different bodies---a property common to almost all the fluorides ---makes it a valuable flux in the production of spiegeleisen. It has long been known that fluoride of manganese as well as a mixture of a manganese combination with fluorspar, can comparatively easily be reduced to metallic manganese by means of sodium. This reaction served Brunner in his successful attempts, the first ever made, to produce metallic manganese in large quantities. The modern application of this method to the blast furnace substitutes carbon for sodium. A highly basic slag, rich in flourides, seems nearly indispensable for the production of a rich ferromanganese in the blast furnace.

The property of fluorspar, to carry phosphorus into the basic slag, has never been of special importance as far as pig iron is concerned, but it is utilized by the Krupp & Rollet methods of dephosphorizing pig in the basic-lined cupola-furnace. Whilst, at all events in the blast furnace process, the property of fluorcalcium to form an easily melting slag with phosphates is of some importance, fluorspar in the process of purifying the pig iron, serves probably only as a flux for the highly basic lime-slag saturated with phosphorus.

In the Thomas process too, and even in the Bessemer converter, fluorspar is in recent practice being added in small quantities for the purpose of concentrating the slag and reducing the loss of metal; very great care, however, is needed to prevent such a slag from attacking the acid lining. It is also said that in puddling in the various steel-making methods and in the Siemens-Martin process fluorspar is added partly as a slag-forming flux. The details are, however, not known.

In foundry work, it is an astonishing fact that limestone, which, because of its cheapness, superseded fluorspar, of late is losing ground to the latter. The limestone flux in cupola-furnace work serves only to slag the ashes of the fuel, the sand adhering to the pig, etc., no chemical effect on the iron being intended. But fluorspar affects the iron noticeably, keeps it gray and soft by keeping the silicon as an alloy, whilst a limestone flux favors the tendency of the silicon to slag. Besides, fluorspar carries some phosphorus and sulphur into the slag. Fluorspar makes it possible to melt inferior kind of pig iron and a higher percentage of scrap. But, strange enough, practice has shown that too much fluorspar is rather injurious than advantageous; one reason for this being that the manganese contained in the iron is thereby prevented from slagging.

The quantity of fluorspar which is added to 100 kilograms of pig iron to be remelted, is one-third, or, at the most, one-half, kilogram. The improvement of the product caused by this flux is specially manifest in the improved cupola furnaces, particularly the Herbert's furnace which has much facilitated the utilization of inferior iron for soft castings. The property of fluor spar to protect manganese does not seem favorable enough to offset the injury due to its silicon-reducing power. Its use would, at least, require melting in a basic furnace or as cold as possible.

As the small quantity of the phosphorus and sulphur which is contained in Swedish charcoal iron, is almost entirely carried off in the comparatively acid slag by fluorspar, this is of prominent importance for the treatment of very pure qualities of iron.

The French Government has enacted a law to the effect that delegates are to be chosen by and from among the miners to investigate and report on the conditions of safety in mines, and in case of accidents to ascertain the conditions under which they took place. Their reports are to be sent to the perfect, and the mine owners must keep filed a special register of the information gathered.

*Chemiker Zeitung.

GEMS AND PRECIOUS STONES.

Mr. Clarence S. Bement, of Bement, Miles & Co, of Philadelphia, in a letter dated the 18th inst., says, in reference to "Gems and Precious Stones":

I would have reported upon it sooner but for the fact that I have lacked the time until now to give it a detailed examination. In every respect it seems to be worthy of the high praise which has been accorded it; and in reference to the colored plates too much cannot be said in their favor. They are the finest I have seen; in fact, I did not suppose that minerals could be pictorially represented with such exactness, particularly in color, lustre, etc.

De Diamant, of Amsterdam, Holland, in its issue of May 23d, says: "Gems and Precious Stones of North America," by G. F. Kunz, has lately been published by the Scientific Publishing Company in New York. It is a splendid work, in 16 divisions and 336 pages, large octavo. We cannot sufficiently praise the learned author's great patience and perseverance manifested in the extensive study and description of all the North American precious stones. The work is simply invaluable for the United States, Canada and Mexico. It can hardly fail that discoveries of great treasures will sooner or later be made in some of the localities which the writer so carefully describes. In our era of positivism, so apt to push disinterested researches in the background, the appearance of a work like this must be hailed with particular appreciation. Concerning its scientific value our recommendation is superfluous. Anybody who has ever written on the subject knows how laborious and troublesome a task it is to scan all the preceding literature in order to sift the truth.

For geologists and collectors in all countries this book is extremely instructive, being the most complete ever written.

The colored plates with which it is illustrated, are all works of art. We call particular attention to the pearl-shell represented, with all its shades of color and reflections of light, so faithfully to nature that it is almost a riddle how it has been brought about. The typographic part and the neat binding add to the credit which the Scientific Publishing Company, the publishers, have earned so well.

Major J. W. Powell, Director of the United States Geological Survey, under date of the 19th inst., writes:

The volume on "Gems and Precious Stones," kindly sent me by the Scientific Publishing Company, would have been acknowledged immediately upon receipt had I not been so extremely busy. I have examined it from time to time as opportunity permitted, and am greatly pleased with it. It is a delightful work upon a delightful subject, and is no doubt destined to be warmly welcomed by those directly interested in gems and precious stones as well as by the archæologist, who now has an exhaustive and elaborate treatise on the history of precious stones among primitive peoples. In its general make-up the work is indeed excellent, while the illustrations are, without exception, the finest of their kind I have yet seen.

THE AURIFEROUS DEPOSITS OF PERU.

Sir C. Mansfield, in his report to the British Foreign Office, writes: In the mountain ranges of Peru, in the vicinity of the seaboard, whenever the rocks are of a crystalline character, gold is found in veins of quartz, which have been intruded into the granite and syenite. In this belt almost all of the spurs of the Andes are of the above formations, and the auriferous quartz is almost invariably accompanied by oxide of iron and mica. The proportion of oxide of iron associated with the auriferous quartz presents considerable variations. Every possible form is met with, from white quartz, permeated with small ferruginous spots, to a reddish rock so charged with oxide of iron that the latter forms almost the entirety of the auriferous mineral, the quartz appearing, as it were, in an accidental manner. The quartz in the auriferous minerals of the coast varies considerably in appearance, being found crystallized in prisms, in semi-crystallized grains, agglomerated with and united by oxide of iron, or in amorphous masses more or less compact or friable, with the appearance of scoria. In this district the auriferous quartz is often associated with other minerals, such as a white talcose substance, smooth to the touch, with a silky, almost silvery polish, with flakes of carbonate of lime of a laminar structure, and limonite of a resinous appearance. Lastly, on the coast of Peru, gold may sometimes be discerned in copper minerals, as well as in those mixed with chalk, copper pyrites, malachite, alacamite, and silicate of copper. In the upland dstricts, where the formations exhibit the character of aqueous deposits, veins of gold are not only found in crystalline earths, but also in metamorphic rocks, such as quartzites and slaty schist, intruding themselves into the sedimentary and eruptive formations. In these veins the gold is sometimes in a pure state, as well as in pyrites, sulphuret of iron, or accompanied by other metallic sulphurets more or less auriferous, copper pyrites, panabase, bournonite, galena, jamesonite, etc. Gold in the mountain ranges is found in veins and threads, and in the alluvial districts of the same in flakes and grains—auriferous deposits, which are known to the country people by the names of "rebosaderos" and "aventaderos," also as "lavaderos"; the above, however, do not occur on the seaboard. In the Cordillera Oriental, in the district called the Montana, gold is usually found in quartz veins injected into talc and clay slate by upheaval of crystalline rocks. The quartz which accompanies the gold in this district is white, and occasionally exhibits marks of oxide of iron, but the latter is never found in the same abundance as in the auriferous minerals of the seaboard. The above-mentioned quartz, more especially in the province of Sándia, sometimes exhibits stains of mispickel or arsenical pyrites. In this part of Peru there are important beds of auriferous soil, and it is from hence that the greater number of nuggets have been extracted.

Gun Cotton Government Monopoly in France.—The French government has made the manufacture of gun cotton cartridges a State monopoly, and has fixed their price for the coal mines at frcs. 4 per. 1 kilog., say 19 cents a pound.

The Sandblast for Cleaning Castings.—The Tilghman sandblast has of late been modified by Messrs. Matthewson so as to be applicable to the cleaning of castings. The process is particularly valuable for plates to be bronzed or plated, and for pieces of such forms as make the cleaning in the ordinary manner troublesome.

THE HARTZ TUBE WELDING MACHINE.

This tube-welding machine, the illustration and description of which we borrow from our contemporary, *The Engineer*, has been made for the purpose of cutting, preparing, piecing and welding tubes, more especially such tubes as are used in locomotive and other boilers, and require renewing at one or both ends, after wear. The machine is provided with a series of cutting and forming rollers, which are shown in Figs. 1 to 5, which are diagrams intended to explain the action rather than show the precise form of the rollers. Fig. 6 is a perspective view of the machine, showing the position of the rollers and the mandril upon which the tubes are cut, formed, and afterwards rolled, when the joint is placed upon it at a welding heat. In Fig. 1, *C* represents the mandril of the machine, and *D* one of the cutting and forming rollers, about to be forced into the tube as it rolls round it. Fig. 2 shows the same roller and tube after the roller has forced its way half through the thickness of the tube. Fig. 3 shows respective positions, and the form of the tube end when the bad piece has been severed from the main part, and the roller just touching the mandril. This part of the work being done, it is necessary to give the end of the piece of the new tube which is to be welded to it the form of the part marked *B* on Fig. 4. For this purpose the roller *D* is changed for one with less taper, and, as shown in Fig. 5, the mandril, which is movable, is changed end for end, the form of the end required for this purpose being as shown. By working it on this taper mandril, the end of the piece of tube is tapered outward, as shown in Fig. 5, and the two pieces of tube now fit together, as shown in Fig. 4. A number of tubes being thus prepared, the suitable cylindrical rollers are placed in the machine, the

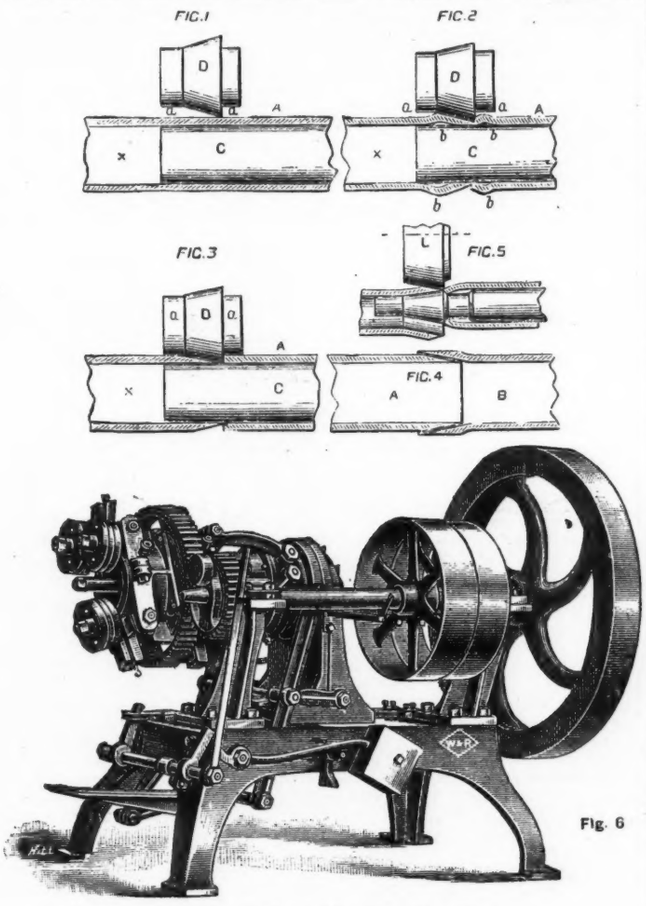


Fig. 6

THE HARTZ TUBE WELDING MACHINE.

mandril changed so that its cylindrical part is under the path of the rollers, and the tubes at a welding heat are placed on the mandril and worked by the revolving action of the roller which runs round the tube, consolidates the weld and gives the tube the proper thickness.

The machine is made by Messrs. Woodhouse & Rawson, and it is now at work at the Swindon, the Nine Elms, Stratford and Crewe works. It will be noticed that the machine, even if not used for the welding part of the operation, would provide an economical means of preparing tubes for electric welding.

COLORING OF METALS BY OXIDATION.

The cause of the appearance of annealing colors has generally, although without any proof, been ascribed to the oxidation of the iron. Mr. S. Stein, well known from his experimental investigations of iron and steel at high temperatures, in the Zeitsch. d. Ver. D. Ing., has now conclusively shown that belief to be well founded. Pieces of iron and steel were carefully cleaned with alcohol and ether, and put into a glass tube; the air was exhausted and replaced with pure nitrogen, which also was pumped out in order to secure a thorough removal of the oxygen. The tube was then gradually heated, and as hydrogen and nitrogen generated from the metals they, were pumped out. The inner surface of the tube, on its cooler parts, became covered with a white precipitate ofa still unknown nature. The whole scale of the temperatures appropriate for the appearance of the annealing colors was tried, but these failed to appear, whereas they were called forth immediately on the admission, into the tube, of air with oxygen.

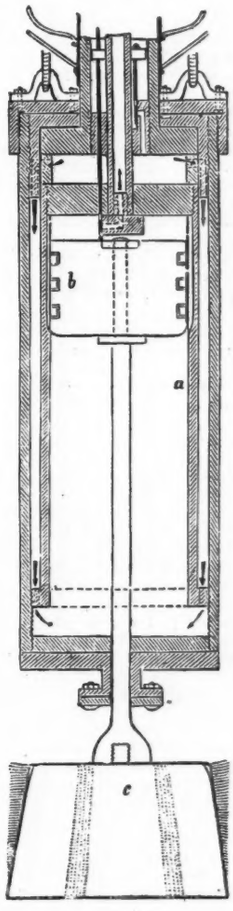
Messrs. R. Schwirkus & F. v. Liechtenstein have demonstrated in an experimental way that an increasing hardness of the steel necessitates an increasing heating to produce the same annealing color, and that the composition of the steel affects the conditions for the appearance of the different colors in a still higher degree than the hardness. The combinations of temperatures and colors in the ordinary manuals are thus entitled to only conditional correctness at best.

Another series of experiments relating to the influence on the colors of the duration of the neating, manifested that they can appear at even very low temperatures if they are only kept up long enough, and that the difference between hard and soft steel asserts itself here, too. A soft piece exposed during several days to the heat of 177 degrees C. showed purple after 68 hours, violet after 93, and dark-blue after 120, whereas a glass-hard piece turned light yellow after 20.5 hours, dark yellow after 27, orange after 50, and purple after 103. At higher temperatures the colors appear with shorter intervals.

POETSCH DRILLING MACHINE.

This machine, for which a patent has been taken out by Hermann Poetsch, is described as follows:

At the lower end of the piston *b*, which runs in the double-walled cylinder *a*, is the drill *c*, which is raised by warm or cold air or by air or



steam being alternately pumped out over the piston *b* and forced in below it. It falls down when the water or air columns above and below *b* are equal. When cold air is used, the borehole needs no lining, as the cold air freezes the walls. To the sides of the drill are fastened brushes.

French suggestions for the betterment of Workmen. The French parliamentary commission to remedy the most crying evils of workingmen's conditions, according to the suggestions of the recent Conference in Berlin, has made the following decisions.

Women after confinement shall only be admitted to work after a lapse of four weeks.

No women shall be allowed to work underground.

The hours of labor underground for children betweeen 13 and 18 years shall be limited to eight a day and their presence there must not exceed 10 hours.

The time to commence and to quit work shall be posted in conspicious places.

The government appoints the inspectors, of whom there are one general and several local and departmental.

The new regulations will not take effect until March 16, 1892, when the last commercial treaty expires.

OFFICIAL REPORTS—EL CALLAO GOLD MINING COMPANY, LIMITED.

The following is a summary of the director's report of the Callao Gold Mining Company to March 15th, 1890, with the accounts for the year 1889:

The change of superintendent which took place in the last half of last year has not altered in any way the management of the mine at El Callao. The works have been proceeded with without any interruption, and the economical measures initiated by the late superintendent, Mr. Jennings, have been faithfully followed up by his worthy successor, Mr. George E. Webber.

In not a few sections of the mine, which were abandoned through not being productive, profitable ore has again been found in sufficient quantities to contribute to the supply of the mill. These discoveries tend to prove that in the heart of the old explored grounds of the mine there still exist some places which at the time of the great richness of the lode were left intact, and which, with the results obtained during the last six months, justify the expenses necessary for a thorough examination of these grounds.

No less important and remunerative are the results which the cave area of 1879 is producing, and promises to produce in the future, as, besides what it has produced last year, it is becoming day by day more evident that much valuable material remains in that part of the mine.

Since the loss of the rich pay-shoot, no discovery has been made of so great importance as the formation found in the bottom of No. 6 shaft at a depth of more than 1,000 feet from the surface. The character and extension of this deposit in ground so much mineralized have given rise to the most flattering expectations as to the future of the mine.

With regard to the expenses at the mine and those of the general administration, considerable economies have been effected during last year. The fact that up to the year 1888 a monthly yield of 4,000 ounces of gold was not sufficient to cover expenses, and that with the same yield in 1889 all expenses were covered and two dividends of one bolivar each per share were paid, is the best proof that can be given of the decrease in the expenditure. These economies have been made without prejudice to the operations or interruption of any kind, but on the contrary, as was stated by the superintendent, never has so much ground been developed, nor have the prospecting works ever before been carried on so actively at El Callao as at the present time.

The Union mine, in which the Callao Company is interested to the extent of nearly one half its share capital, and to which it has made advances to the extent of $340,376, for the purpose of exploration, is referred to in a hopeful tone.

During the financial year there were crushed in the new mill 57,301 tons, giving a product of 52,268·80 ounces of gold, and the total weight of yield from all sources was 52,973·55, of a value of 5,144,602 francs.

METALLURGICAL PROGRESS IN ITALY.

A British consular report from Genoa states that a steady demand exists in that district for machinery for the equipment of foundries and engineering works, and also for pieces of marine and other engines which these establishments have orders for, but which they are not in a position to complete themselves. The greater part of this import is from England. As regards steel castings and shafting some of the establishments are getting them from Germany, where, they say, the quality has been much improved of late, and prices are lower, but others stick to their English correspondents, and prefer to pay a somewhat higher price and get thoroughly reliable goods. Steel boiler-plates can still be had from Glasgow as cheap as from anywhere, and are the best; but, on the other hand, the contracts for the heavy plain plates for boilers of the government ships are to be given to Terni, and those that are required flanged or worked will be ordered in Germany. The lighter boiler-plates and ship-plates are now made extensively in Genoa by Raggio & Co. and others; and thin steel plates are also made at Sestri and at Rivarolo, where an English manager is said to turn out good work for Dufour & Co. Works for making the delta metal, on Mr. Dick's patent, have been set up at Cornigliano, and have contracted for the propellers of the *Liguria* and *Marco Polo* Government ships, and undertake other important orders. Iron galvanized roofing, both plain and corrugated, is now made at Sestri, and iron and steel wire is made in Turin. At Milan an extensive plant has been put down for making steel castings, and work will shortly commence there, orders being meanwhile solicited at very low rates in order to establish business. The import of anchors and chains has been considerable in 1889, owing to the demand for Government and other vessels building, and this branch of trade, at least, is still entirely supplied by British manufacturers. The import of yellow metal has been gradually and steadily diminishing, but a moderate supply was still imported for some of the wooden ships, which, though in good condition, had been lying idle while low freights prevailed. The import of tin plates was rather smaller than in 1888, but only because the stock in store was considerable. The demand for tin plates is sure to increase, as they are largely used by the food-preserving establishments, and a new and large demand will arise in Genoa and Savona for the Caucasus oil cases. A company for the manufacture of this article at Brescia has been floated in England, and the duty is so high that the temptation to try to make tin plates in Italy is evident. The iron works of the Genoa district have been in active work throughout the year, and have considerable orders on hand. Ansaldo & Co., who now employ more than 2,000 hands in their two establishments, turned out no less than 40 locomotives in 1889 at Sampierdarena, besides several sets of small marine engines and the great 20,000 horse power engines for the ironclad "Sicilia," which is building at Venice; and they have in hand the engines for three large and four smaller Government vessels, as well as three large sets of engines for the Navigazione Generale Company and two for the ships now on the stocks at their establishment at Sestri. At this latter place they launched, in 1889, two steel sailing ships, one of which, the "Catterina Accame," was the first steel ship built in Italy; besides several steel pinnaces for Government, a floating crane of 120 tons for Genoa, and other important work. And they have now on the stocks two large and two smaller steel sailing ships, two mercantile steel steamships, two large and four small Government vessels, and several other orders which will extend beyond the close of the year. Odero & Co., who employ about 600 hands, turned out of their works at Sestri during 1889 three torpedo-boats, four barges, and about 23 sets of pinnace engines for the Government, besides about eight sets of land engines for mills, etc., from 20 to 100 horse power, and various other work; and they also are full of orders extending beyond the current year, having on hand for the Government four torpedo-boats of the Schickau type, and one larger one of the type of the "Tripoli," a steel sailing ship, and other work for the merchant navy, and a number of land engines and boilers.

The great works at Savona, under the firm of Tardy, Benecke & Co., but now worked by German capital and under German management, are chiefly employed in making steel rails, but they also manufacture heavy ship-plates, employing fully 1,500 hands. They also have been, and are, full of work, though it is said the shareholders are not to have the dividends expected. Beside these great works, the establishments of Cravero & Co., Raggio & Co., Balleydier & Co., Wilson & Maclaren, Dufour & Co., and many other smaller firms have all been actively employed, the high tariff and premiums on shipbuilding giving them such ample protection that, as long as the country chooses to favor them at the expense of the public purse, they are enabled thereby to compete against cheaper prime materials, and more practised skill as manufacturers.

THE COOK AMALGAMATOR.

This machine is the result of a long course of practical experiments by Dr. Cook, and as an amalgamator it is claimed that its advantages over other similar devices are, that it will save all mineral that will amalgamate no matter how fine. It is further claimed that it will save floured mercury, and will produce pay from tailings of other amalgamating devices, treating pay free amalgamating ores.

The method of operating the amalgamator is as follows: The material, either pulp from some pulverizing or stamp mill, or placer dirt or gravel, passes through spout *D* to the amalgamating cylinder *A*, which is rotated about 30 times per minute. The spirals *e* form channels which divide the material and keep it divided all the way through the cylinder a distance of 40 feet. The rotating action spreads the pulp and subjects it to a rolling motion in the water, the gangue going ahead of mineral (Fig. 3) ¼ of the distance over amalgamating surface *E* and ¾ over non-amalgamating

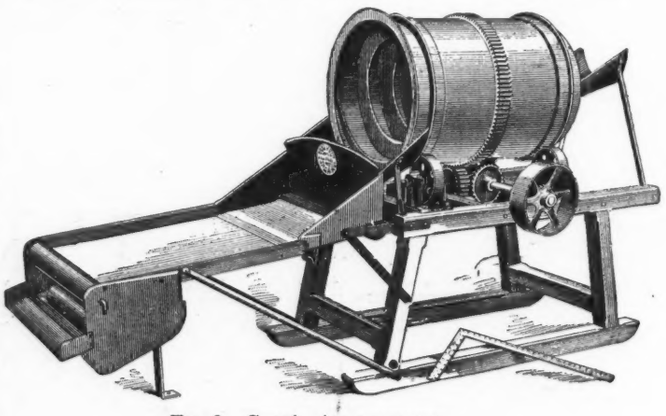


FIG. 2. COOK'S AMALGAMATOR.

surface *e*, which always holds enough mercury to coat or amalgamate free mineral, making the whole distance amalgamating with only ¼ amalgamating surface. The mineral is separated from the gangue, amalgamated and collected in little bunches of amalgam in cylinder and as amalgam passes to the tables and wells. The tables have a continuous amalgamating surface to the mercury wells where the amalgam is collected. Gate *h* spreads the water, etc., which passes under it and flows up from gate well and is thrown down by splash plate h^1 on table *H*, thence on to tailings indicator *J* and discharge spout *o*.

The tailings indicator consists of two amalgamating plates on which the tailings drop; these plates indicate, collect and deposit in the well, any possible loss of amalgam or mercury from machine.

The cylinder is 30 inhces long, with a diameter of 20 inches, and the walls of the channels are 4 inches.

An extra attachment goes with the machine for placer mining. Fig. 2 gives the general appearance of the machine.

A company to manufacture these amalgamators has been organized with a capital stock of $100,000, of which Dr. Cook is president, J. P. Fernald, of the Pennsylvania Sugar Refinery Company, is treasurer, and Edward Howe, secretary. The factory is in full working order and is of considerable capacity, and the machines are now being put upon the market.

Lead Tempering of Steel.—The Chatillon-Commentry Company has for some time past been experimenting with gun tubes, projectiles and armor plates of steel tempered in lead. The process is simple, the steel being raised to a red heat and then plunged in a bath of molten lead, where it is allowed to cool gradually. The beneficial effects of this treatment are very marked, the elastic limit, breaking stress and elongation being all increased. The following figures show the character of the results obtained in treating different varieties of steel:

Steel containing carbon.		Elastic limit.	Breaking stress.	Percentage elongation.
0·54 per cent.	Untempered.	....	39·36	15·5
	Tempered.	....	48·25	9·5
0·64 "	Untempered.	....	49·08	10·5
	Tempered.	....	56·51	13
0·73 "	Untempered.	24·76	50·79	10
	Tempered.	36·82	60·32	12

WHY IRON RAILS IN USE DON'T RUST.

Mr. W. Spring seems to have solved the question why rails in use are less apt to rust than when stocked. In a paper in *Bulletin de la Societe Chimique de Paris* he ascribes this protection to the layer of rust on the surface of the rails which is exposed, while moist or wet, to the pressure or friction of the train wheels. Ironoxidhydrate Fe_2OH is under such conditions transformed into ironoxiduloxyd Fe_3O_4, which gradually covers the rail-top as a black gray film, and in contact with metallic iron becomes positive-electric, making the iron negative electric. Thus the same causes are at play here which produce the "passiveness" of iron. A common instance of the "protective" effect of a positive-electric body in contact with iron are the zinc-lined iron tubes which, when sunk in an oxidizing medium, show the positive-electric zinc exclusively affected. If a piece of iron in contact with zinc is put down in dilute sulphuric acid, the zinc will be dissolved, the liberated hydrogen collects on the surface of the iron and withdraws it from the attack of the acid.

Ironoxiduloxyd proves accordingly diametrically opposite to ironoxidhydrate which, when in contact with metallic iron, becomes negative-electric, makes the iron positive-electric and consequently promotes its oxidation.

Mr. Spring, in order to verify his suppositions, brought a mixture of a slightly moistened ironoxidhydrate and small iron plates, scoured and polished, in a cylinder and subjected it to a pressure of from 1,000 to 12,000 atmospheres. The examination of the pressed mass showed that a firmly adhesive black layer of magnetic ironoxiduloxyd of a thickness of about 0.5 millimeter had formed on the surface of the iron plates, and, further, that the plates had been noticeably attacked—indicating that the formation of ironoxiduloxyd had been caused by combination of ironoxidhydrate and a part of the underlying metallic iron.

A direct examination of the black, small scales that can be separated from the surface of the railtops, proved the presence in them of ironoxiduloxyd beside ironoxidhydrate and metallic iron in different quantities.

LOCOMOTIVE WORKS IN NEW SOUTH WALES.

A company has been formed in England under the name of the Australian Locomotive Engine Works, Limited, with a capital of £200,000, one-half of which was subscribed by members of the firm of Greenwood & Batley, Limited, of Leeds, for the purpose of establishing a locomotive works in New South Wales. A contract has been entered into between the company and the government of the colony, in which the latter agrees to order 100 locomotives from the new works, to be delivered within three years at the price of £65 per ton for main-line tender engines and £70 per ton for tank engines, and a further order of 100 engines is guaranteed at a price to be arranged from a sliding scale based upon the market price of copper, spelter, iron and steel plates. Mr. D. Drummond, a distinguished railway mechanical engineer, is to be managing director and will reside at the works. For the purpose of comparison of the prices asked by the company with the prices at which engines can be imported into the colony, the following table is given, based upon a competition for 52 engines by a colonial maker and English firms.

	Per ton.
Suburban engine, packed f.o.b. London	£77
Same, delivered in steam, Adelaide	88
Same, colonial made, delivered in steam	115.28
Express passenger tender engine, inside cylinder, packed f.o.b. London	60.25
Same, delivered in steam, Adelaide	69.9
Same, colonial made, delivered	90.37
Heavy slow freight and passenger tender engine, outside cylinder, packed f.o.b. Glasgow	55.46
Same, delivered in steam, Adelaide	63.84
Same, colonial made, delivered	82.9

The following is a comparison of the proposed prices with those actually paid for engines recently imported :

Maker.	Class of Engine.	Weight, engine and tender empty, t. cwt.	Cost, proposed scale.	Actual price paid.	Date price quoted.
Dubs,	Express passenger,	50 6	£3,270	£2,877	Jan., 1885.
Beyer,	Goods, Mogul,	52 0	3,383	2,866	1884.
"	" "	52 0	3,383	2,850	Aug., 1889.
"	Suburban tank,	31 7	2,230	2,240	1885.
Vulcan,	Shunting tank,	28 2	1,967	2,290	1883.
Average			£2,847	£2,672	
Beyer,	Shunting mineral tank			2,870	Aug., 1889.

The proposed scale of prices is thus about 8·3 per cent. above the prices paid hitherto.

FIG. 1.

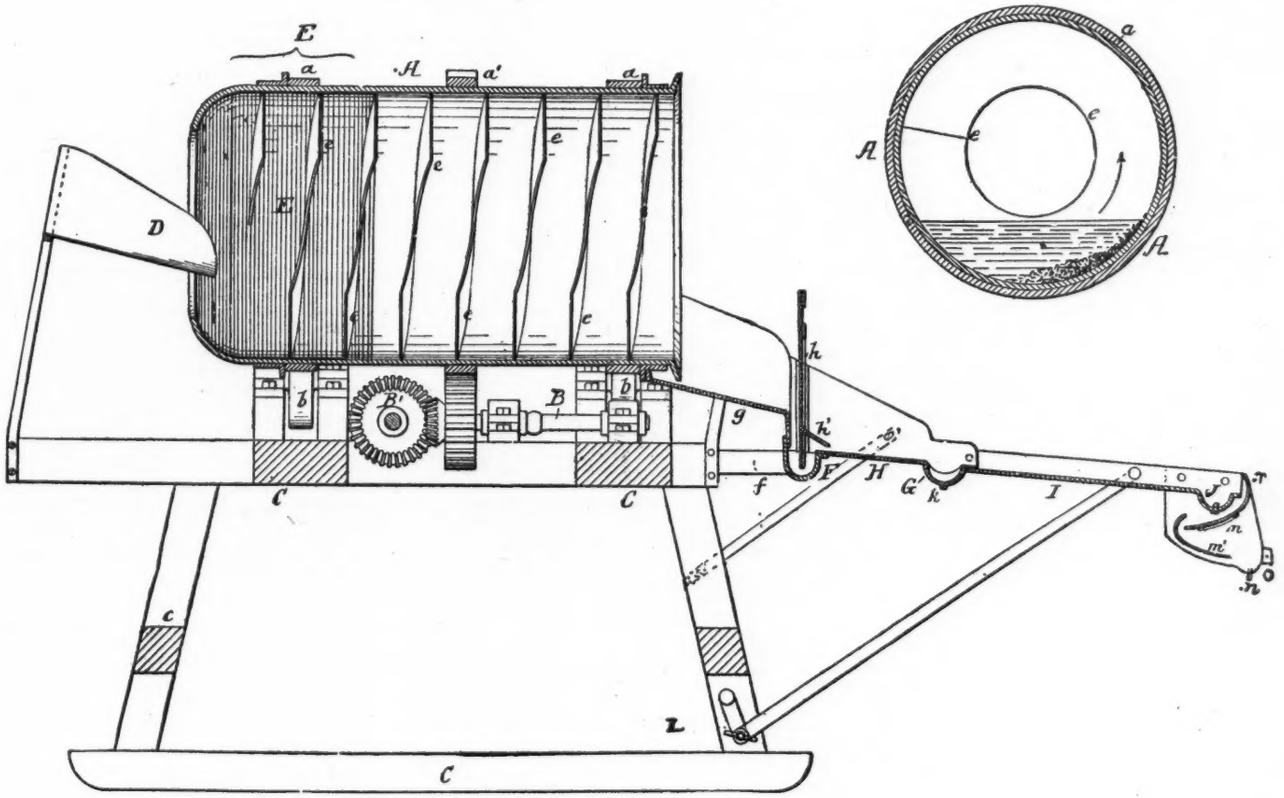


FIG. 3.

COOK'S AMALGAMATOR.

Co-operative House Painting Association.—Le Travail, a Parisian co-operative association of working men, has published its report of business for 1889. The business is house-painting. There are 16 members, and the total capital is $3,800 in 16 shares. An elected manager has practical control of the workmen, and a board of directors controls the finances. In addition to the 16 shareholders, some 200 workmen are employed. The shareholders are paid the usual wages, and divide profits not only among themselves, but among the outside employés as well. The earnings last year were $5,000 above expenses. This sum was divided as follows: The capital invested was paid five per cent. interest, the sinking fund received five per cent., 25 per cent. went into the reserve, 35 per cent. to the shareholders as dividends, and the remainder was distributed as a percentage on wages.

Talc for Keeping Boilers Clean.—In cases where the water for boiler use contains impurities, especially carbonate of lime, Mr. P. Vigier, in *Moniteur Industriel*, recommends to mix powdered talc with the feed-water, or periodically to put a certain quantity of it into the boiler. The talc acts mechanically; in its rapid movement in the boiling water it carries with it the particles of carbonate of lime which otherwise are deposited and form scale. In a series of experiments Mr. Vigier has found the proper proportion of talc for this purpose to be $\frac{1}{10}$ of the weight of the carbonate of lime deposited. Water leaving a deposit of 200 g. per cubic meter would thus require 20 g. powdered talc for 1,000 l. water evaporated. The deposit, which takes the form of mud, is periodically blown off.

SOCIETIES.

AN ENGINEERS' CONGRESS IN 1892.

A decision to hold an engineers' international congress in connection with the world's fair was reached at Chicago on the 19th inst. by the Western Society of Engineers. Chairman E. D. Corthell said that this action of the western society would be followed by a submission of the subject to the American Association of Civil Engineers and to the world's fair management.

ENGINEERS' CLUB OF PHILADEPHIA.

The regular meeting, held at the club rooms in Philadelphia, on the 7th inst., Vice-President Wilfred Lewis in the chair, on motion of Mr. Henry G. Morris, expressed itself unanimously in favor of officially endorsing the invitation, which had been extended to the Local Committee on Reception of the British Iron and Steel Association, to make such use of the club-house as might be found convenient. The Secretary presented, for Mr. Strickland L. Kneass, a description of a New Condensing and Refrigerating System. The Secretary announced that there would be a lunch served after the next meeting on June 21st, 1890.

ENGINEERING ASSOCIATION OF THE SOUTHWEST.

The regular June meeting of the Engineering Association of the Southwest was held at Nashville, Tenn., on the 12th inst., President John MacLeod, of Louisville, Ky., presiding, with an attendance of thirty-two. A communication was read from the American Society of Civil Engineers, inviting the officers of the Association to attend the annual convention of the American Society at Cresson, Pa., beginning June 26th. A communication was read from Mr. J. W. Adams, of Chattanooga, Tenn., member of the Association, suggesting the propriety of considering whether this Association shall participate in the courtesies extended the Iron and Steel Institute of Great Britain and the Verein Deutscher Eisenhüttenleute on their visit to this country in October next. On motion, the matter was referred to a committee to correspond with the national societies having the arrangement of the entertainments in hand.

Mr. Landreth from the committee on the "Cause of Setting of Cement," a report from which was due at this meeting, reported that, owing to serious illness, Mr. Granville W. Shaw, of Louisville, Ky., had been unable to participate in the work of the committee, and requested a postponement of the date of the report, which was granted. Chairman MacLeod from the committee on "Affiliation with the American Society," reported that it had been impossible for any member of the committee to attend the meeting of the committee of the American Society at New York, on June 4th, and asked the discharge of the committee, which was granted. The subject of joining the "Association of Engineering Societies," was discussed and correspondence with the officers of the Board of Managers of that organization was submitted. On motion the decision was referred to the Executive Committee of the Board, with power to act.

Applications for membership were received from the following gentlemen and referred to the board of directors: Geo. S. Burtchaell, engineer in charge of the Rutland & Julien branch of the Alabama Midland Railway, Waycross, Ga.; Henry Wolters, architect, Louisville, Ky.; Daniel M. Andrews, assistant engineer in charge of the Coosa River improvement, Montgomery, Ala., and Elmer L. Corthell, consulting engineer, Chicago, Ill.

Mr. Jno. B. Atkinson, of Earlington, Ky., then presented his paper on "Coke Making in the Western Kentucky Coal Field." The paper dealt very extensively with a series of trials and experiments carried on at Earlington, Ky., for the purpose of solving for that district the question of desulphurization of coke, which is here made from slack coal only, carrying a higher percentage of sulphur than the coarser grades of coal. The author gave accounts of his travels and investigations seeking light on this subject of so great importance to the western Kentucky coal fields, but found the condition and character of the coal and the manner of the occurrence of the sulphur in the coal so different from that found elsewhere that no parallel whatever could be drawn from outside experience. This was verified by repeating at Earlington in succession and without avail the methods which were elsewhere successful. Mr. Atkinson's efforts to date are only partially successful, but they are still being prosecuted, and should they be rewarded, as the author expects, with ultimate success, the result will be of the greatest commercial importance to the western Kentucky coal belt, whose product is at present unsuited to iron making.

Owing to the unavoidable absence of Mr. A. V. Gude, of Atlanta, Ga., his paper on the "Foundations of the Georgia Pacific Railway over the Yazoo River, Miss.," was deferred.

Mr. W. C. Smith, architect, of Nashville, member of the Association, presented the Association with a group of framed photogravures of the celebrated Forth bridge and the Eiffel tower. The thanks of the Association were voted to Mr. Smith for his donation. A lunch was then served by the local members of the Association, after which the meeting adjourned.

Electric Compared with Animal Traction.—The conclusions arrived at by Mr. Paul Gadot in his paper recently published in Paris on the above subject sums up as follows: "The economy of electric traction, either using the motor car or the battery tender, as compared with animal traction as now used in Paris, is thus seen to be the difference between

Present cost per car-kilometer	·561 francs.
And cost per car-kilometer with three daily groups (best)	·507 "
Or a saving per car-kilometer of	·054 "

"But there are several further points in which the use of electricity is of advantage, notably in the matters of paving, rent and interest of stations, etc.

"The roadbed and rails will need no more and no less repairing under the new than under the old system. But the paving between the rails will surely be greatly economized, say by one-third. The tramways of Paris spend on an average ·027 franc per car-kilometer in paving between the rails; one-third of this would be a saving of ·009 francs per car-kilometer, bringing the economy of electricity up from ·054 to ·063 per car-kilometer.

"As to rent of stables, stations, etc. (or interest at 6 per cent. on capital invested therein), the present expenditures in the Paris system coming under this head amount to ·117 franc per car-kilometer. But the space needed per car in horse service is 68 square meters. In the new system such is the saving by the absence of horses that this item is decreased one-half, or to 34 square meters. Here is a further saving of ·058 franc per car-kilometer, and the total economy is increased from ·063 franc to ·121 franc per car-kilometer. In other words, the total cost of traction, repaving and rents becomes:

At present	705 francs.
Under the new system	584 "
An economy of	121 "

per car-kilometer, or about 17 per cent.

"And it should furthermore be borne in mind that the showing here given for horse traction is the best possible, while the developments in electricity render probable a constant improvement over the figures given for electricity."

Production of Basic Steel.—The returns, which Mr. Gilchrist has collected and published for 1889, show that the total British production of basic steel in that year was 493,919 tons; and as the total production of Bessemer and open-hearth steel of all kinds for the same year was 3,569,960 tons, basic steel represented about 14 per cent. of the whole. The proportion of the total quantity of steel made by the two processes contributed by the basic process is, however, much larger in the case of the Bessemer process than in that of the Siemens, about 5·6 per cent. of the total quantity of basic steel made in Great Britain in 1889 being obtained by the latter system. The details of the basic steel output for 1888 and 1889 are as follows:

COUNTRIES.	1888.	Under ·17% Carbon.	1889.	Under ·17% Carbon.
	Total Tons.	Tons.	Total Tons.	Tons.
England	408,594	276,476	493,919	348,828
Germany, Luxemburg and Austria	1,276,070	1,026,033	1,481,642	1,185,323
France	222,333	158,223	222,392	159 271
Belgium and other countries	46,237	32,300	76,599	71,217
Total	1,953,234	1,493,032	2,274,552	1,764,639

Small quantities of steel have been made in the United Kingdom during 1889 by modifications of the Bessemer process. The Clapp-Griffiths process, one of these, has at several works been either entirely discontinued or has given place to other modifications. Experiments have been made at one or two works with the so-called Robert-Bessemer process, but no considerable quantity of steel has thereby been produced.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent Office:

PATENTS GRANTED TUESDAY, JUNE 17TH, 1890.

430,110. Car-Coupling. Frederick A. Canales, Everett, Mass.
430,119. Anti-Friction Bearing. Thomas R. Ferrell, Boston, Mass., Assignor to the Boston & Lockport Block Company, of New Jersey.
430,160. Valve for steam-engines Samuel T. Williams, Baltimore, Md,
430,171. Car-Coupling. Henry P. Bullock, Jonesborough, Tex., Assignor of one-half to Evander A. Baily, Alfred B. Roberts, and Rufus L. Brandon.
430,197. Metal railway sleeper and tie. James Richardson, Tarrytown, N. Y.
430,198. Apparatus for making chlorine. Ernest Solvay, Brussels, Belgium, Assignor to the Solvay Process Company, Syracuse. N. Y.
430,199 Process of recarbonizing steel. August Spannagel and Fritz Springorum, Haar, near Ruhrort, Prussia, Germany, Assignors to the Phœnix Actien-Gesellshaft fur Berghau und Huttenbetrieb, same place.
430,202. Car-Coupling. William J. Walker, St. Louis, Mo.
430,212. Manufacture of explosives. Hiram S. Maxim, London, England.
430,213. Car-Coupling. Hiram S. Maxim, London, England.
430,214. Recoil-Check for ordnance. Hiram S. Maxim, London, England.
430,215. Recovering solvents from explosives. Hiram S. Maxim, London, England.
430,238. Means for conveying or transferring coal, etc. Charles S. Schenk, New York, N. Y.
430,239. Car-Wheel. William W. Snow, Hillburn, N. Y.
430,241. Hoisting apparatus. George H. Warren. West Superior, Wis.
430,247. Car-Coupling. John E. Davis and Charles A. Lewis, Olax, Neb.
430,251. Force-Pump. Benjamin F. Keddall, Jefferson, Pa.
430,275. Magnetic Separator. Thomas A. Edison, Llewellyn Park, N. J.
430,280. Magnetic Separator. Thomas A. Edison, Llewellyn Park, N. J.
430,292. Rock Drill. Thomas B. Kerr, Kansas City, Kans.
430,305. Gold Saving Device. Charles Trafton, Yankee Jim's, Cal.
430,310. Double Acting Explosive Engine. John W. Eisenhuth, San Francisco, Cal., Assignor by direct and mesne assignments to the Electric Vapor Engine Company, same place.
430,311. Cut-off for Compound Engine. John W. Eisenhuth, San Francisco, Cal. Assignor by direct and mesne assignments to the Electric Vapor Engine Company, same place.
430,312. Single Acting Explosive Engine. John W. Eisenhuth, San Francisco, Cal. Assignor by direct and mesne assignments to the Electric Vapor Engine Company, same place.
430,342. Rotary Engine. Lincoln Hausmann, New York, N. Y.
430,379. Apparatus for Solution of Colo, etc. Stephen H. Emmens, Harrison, N. Y.
430,414. Muffle Furnace. John B. Archer, Washington, D. C.
430,415. Car-Truck. John A. Brill and George M. Brill, Philadelphia, Pa.
430,453. Process of Melting or Reducing Metals by Electricity. Thomas L. Wilson, Brooklyn, N. Y.
430,455. Brake Mechanism for Cars. Allen J. Wright, Cleveland, O.
430,460. Car-Coupling. Aaron B. Allen, Pueblo, Colo.
430 461. Means for Preventing Boiler Incrustation. William B. Bull, Quincy Ill.
430,471. Steam Generator Furnace. Francesco A. Fazio, Italy.
430,488. Miners' Candlestick. Louis A. Sholder, Cleveland, O.
430,503. Rail-Joint Fastener. Louis Avers, Marion, O.
430,538. Furnace for heating metal. John W. Parmelee, Wilkesbarre, Pa.
430,546. Dumping car. William A. Sharp Meadow Bluff, W. Va.
430,553. Chair and sleeper. Joseph W. White, Halebank, near Widnes, County of Lancaster, England.
430,561. Apparatus for operating dredge or excavator buckets. Frederick B. Barrows, Duluth, Minn., assignor to himself and William M. Spalding, same place.
430,589. Sectional steam boiler. William H. Page, Norwich, Conn. Assignor to the William H. Page Wood Type Company, same place.
430,590. Support for railroad rails. James M. Price, Philadelphia, Pa.
430,602. Crushing mill. Cullen B. Bingham, Volcano, Cal.

PERSONALS.

Dr. Albert R. Ledoux has been appointed official chemist to the New York Produce Exchange by the President and Board of Management of that institution.

Mr. C. H. Cross, who at one time solicited advertisements for the ENGINEERING AND MINING JOURNAL, has not for some time past been connected with this paper.

Mr. A. P. Morison, a popular and prominent member of the Consolidated Stock and Petroleum Exchange, of New York, has returned from a fortnight's trip to the Southwest.

Mr. Anthony Pulbrook, Chairman of the North Mexican Milling and Mining Company, has returned from his visit of inspection of the company's property at Cusihiuriachic, State of Chihuahua, Mexico. Mr. Pulbrook has left New York for England, and Mr. Ottakar Hofmann remains in Mexico directing the operations of the company.

Mr. Edwin Harding, of Napier, New Zealand, has been in Pittsburg during the past week, at the Seventh Avenue Hotel. He is on his way home, having spent a long time in Europe and about two months in America. His object in visiting Pittsburg is to make a study of natural advantages, and the way they are improved artificially. He is paying particular attention to natural gas wells, there being a probability of wells being struck in his own country.

OBITUARY.

Joseph Reeves died at Bridgeton, N. J., on the 14th inst., in his eighty-third year. For sixty-six years he had been actively connected with the Cumberland Nail and Iron Company, Bridgeton, N. J.

Captain Clarence N. Clarke, a civil engineer, of Washington, D. C., employed in the office of the chief of ordnance, committed suicide on the 16th inst., it is stated while suffering from temporary aberration of the mind caused by nervous prostration.

Reuben Downing, a prominent resident of Wilkesbarre, Pa., died on the 18th inst., aged 68 years. Since 1870 and up to the time of his death he was general real estate agent of the Lehigh and Wilkesbarre Coal Company, and was Vice-President of the Hazard Manufacturing Company.

William Ross Naffel died on the 14th inst. at the age of seventy-four years. His life work was finished twenty-five years ago. His activity in earning a living was manifest in the days of the canal packet boat and the stage coach, and he was also active in developing the railroad and coal mines in the Wyoming Valley a half century ago. Of late years he has lived in retirement upon his ample means. He was well known throughout New York, Pennsylvania and New Jersey.

Duncan Littlejohn died at his home in Brooklyn, N. Y., on the 17th inst. He was born in Liverpool, England, in 1809. He was trained for mercantile business and the iron trade. In 1848 he came to the United States and became the agent of several English iron firms. All his business life was spent in this way. Besides acting as an importer, he was also the agent of several American iron manufacturers. Mr. Littlejohn remained in business in New York until 1872, when he retired.

INDUSTRIAL NOTES.

The Union Iron Foundry, at West Lynn, Mass., melted and ran its first iron on the 9th inst.

The coke iron furnace of the Cherokee Iron Works, at Cedartown, Ga., resumed operations on the 10th inst.

A fire broke out in the crucible department of the Detroit Steel and Spring Works, at Detroit, Mich., on the 18th inst., destroying that building.

Work has been started in the Eagle Rolling Mill, Pittsburg, Pa., and employment given to 100 men. The works had been idle for three months.

The West Superior Iron and Steel Company proposes to build a Bessemer works and rolling mill for steel piates, beams and structural shapes.

The Bay State Electric Motor Works, Peabody, Mass., have been transferred to a stock company, and are now to be known as the Franklin Motor Works.

D. C. Lauth, of Philadelphia, Pa., is preparing plans for a rolling mill for the Covington (Va.) Improvement Company. The capacity of the mill will be 50 tons per day.

The Bellefonte, Pa., Nail Works have resumed operations again after a short idleness for repairs. They are working night and day. The works will soon be run by artificial gas.

The Fulton Iron Works, of St. Louis, Mo., are about to make four fly wheels 24 feet in diameter for the Broadway Cable road, which will weigh, when completed, 60 tons each. Each wheel will be made in 10 sections.

The Brilliant Iron Works were offered at auction at Steubenville, O., last week. The amount required to start the bidding was $88,666.67, and nobody offered it. The mill will be advertised for 30 days and offered for sale again.

The Milwaukee Bridge and Iron Company contemplates the erection of a new plant at Milwaukee, Wis. The main building will be 600x100 feet, and the works, exclusive of machinery, will cost $175,000. The working force will be doubled.

The sale of the Richardson Saw Works, of Newark, N. J., to Henry Disston's Sons, of Philadelphia, Pa., has been completed, and the property is now in possession of the Disstons, the price being $5.0,000, of which $75,000 was paid in cash and the balance secured by bond and mortgage.

The first span of the new railroad bridge crossing the Delaware River at Phillipsburg, N. J., by which the New Jersey Central Railroad will connect with the Pennsylvania Railroad, has been raised. Nearly all of the bridge piers have been completed, and regular traffic over the span will be possible on October 1.

The Cherokee Iron Manufacturing Company, organized to build a 50-ton iron furnace at New Birmingham, Tex., has purchased 400 acres of iron lands, with A. B. Britton, President, and E. S. Mansell, Secretary. A site has been selected, and R. A. Barrett, of Rusk, Tex., will prepare the plans and specifications. The capital stock is $500,000.

The Wenstrom Consolidated Dynamo and Motor Company, of Baltimore, Md, it is reported, has purchased for $50,000 the Five Mills property at Calverton, consisting of about thirty acres of land, and with water power estimated at 400 to 500 horse power. The company intends to erect a dynamo and motor factory, and will employ about 2,500 men.

The new plant of the Greensburg Steel Company, located at Huff station, Pa., is now in operation. The plant contains a single and a double heating furnace, one welding furnace and a 24-pot crucible furnace, and is also equipped with a 600-pound and a 1200 pound hammer. The following are the officers of the company: John Kuhns, president; James C. Clarke, treasurer; J. Clark Williams, secretary, and A. C. Isaacs, general manager.

Messrs. H. O. Bonnell, W. E. Taylor, Robert Bentley and Tod Ford, of Youngstown, O., and R. W. Taylor and Charles Stewart, of New York, sailed on the 14th inst. for Glasgow, Scotland. Information is to the effect that they are authorized, if the price and terms are acceptable, to sell to an English syndicate the mills and furnaces of the Brier Hill Iron and Coal Company, the Mahoning Valley Iron Company, the, Youngstown Rolling Company, Cartwright, McCurdy & Co. and the Ohio Iron and Steel Company.

The Keystone Bridge Company, Pa., has just completed a girder for the new City Hall of San Francisco, Cal., which is the largest ever made in the United States, so far as the members of the firm know. It is 105 feet long and weighs 70 tons. In diameter it is five feet by three. A contract for two girders was given to the company last November, and they have been working on it ever since. The materials for the second one are now being prepared. The girders are intended for the ground floor of the building.

The International Brotherhood of Boilermakers and Iron Shipbuilders' Protective and Benevolent Union, in session in St. Louis, Mo., has elected these officers: President, Thomas J. Curran, of New York; Vice-President, George Thompson, of Minneapolis; Secretary, Charles Marugg, of St. Louis; Treasurer, Anthony Duffy, of Brooklyn. Executive Council, Thomas W. Dwyer, of Chicago, Chairman; William H. Longacre, Reading, Pa.; William Lynch, St. Paul; Arthur Graham, Philadelphia; Frank Stevens, New York. The chief questions which will come before the convention are how to increase their membership, the eight-hour system, and how best to secure its adoption, and the advisability of petitioning Congress to grant subsidies to promote the iron shipbuilding industry of the company.

In the suit, at Philadelphia, Pa., of the American Pipe Company against the Delaware Company for $769,254.53 on a contract for building a system of water works in Westmoreland County, Pa., the Delaware Company filed an affidavit of defense on the 17th inst., denying that it was compelled to pay the claim because the pipe company had not complied with its contract. Both parties in this lawsuit were contractors. The Delaware Company secured the contract for building the water works. The American Pipe Company, assignee of the Pennsylvania Pipe Company, accepted the subcontract and agreed to lay pipe and build the water works for the boroughs of Greensburg, East Greensburg, Ludwick, Penn and North Huntingdon, and for the townships of Unity and Hempstead, all in Pennsylvania.

The session, on the 19th inst., of the Amalgamated Association of Iron and Steel Workers was taken up with the consideration of the report of the Committee on Constitution. The wage scale for the year commencing next month has been completed and delivered to the various committees in printed form. It will likely be presented this week to the manufacturers, as it must be in their hands a week before July 1st. In the main, the scale is the same that regulated wages during the year just closing. Of course some other changes have been made, and they may meet with objections. As stated before, the basis of the boiling scale, $5.50 on a two cent card, has been preserved, but there are some slight changes to regulate the charges for boiling furnaces. In the wire rod mill scale arrangements were made to run on the eight-hour plan. The guide mill scale stipulates that the night roller shall receive two-fifths of the night turn, whereas the present scale gives him but one-fifth. No material changes from the present scale have been made in the other departments.

The workmen in the several departments of the National Tube Works, at McKeesport, Pa., which is owned by Boston capitalists, will receive an advance in wages. The company, by a novel idea, has at last settled with its employés, who a month ago struck for an increase of 10 per cent. By a practical demonstration, arrived at by a tour of a committee of the workmen at the expense of the company this end was reached. Two weeks ago General Manager E. C. Converse proposed that a committee of workmen be appointed to investigate the wages paid by competing mills of the country. He agreed at the same time to equalize any difference discovered in the wages in other mills. The committee visited Chicago, Boston and Philadelphia, the American Tube and Iron Company's plant at Youngstown, Ohio, and the tube works of Pittsburg and other points. The committee returned home last evening, and has its report ready for the men and the company. It finds that at none of the plants are higher wages paid that at McKeesport, except in certain departments of the Pennsylvania Tube Works on Second Avenue, Pittsburg, Pa. There it was learned that the turners, down bar pullers, thread cutters and straighteners receive a few cents per day more than do the same employés at McKeesport, and these wages will be made uniform. As for other departments, it was learned that the McKeesport firm pays more than other mills. The employés affected by the advance number about 300 men of over 400 employed in the entire plant.

This method of settling a wage difficulty is unique. It is regarded by business men as introducing a method of settling such disputes more speedily and with less feeling than any proposition heretofore made. Last year during a similar controversy at the Homestead Mills of Carnegie, Phipps & Co., this firm claimed that it was paying more than any other firm for the same class of work, but no official steps were taken by means of joint committees to demonstrate such a claim. This instance, it is said, is the first in which such a method has been used to finally determine a wage question, and upon which basis it was settled.

CONTRACTING NOTES.

The Wallis Iron Works, of New York, has received the contract for a bridge in Prospect Park. The price is $15,542.

The contract for the 800-ton practice vessel was not awarded to F. W. Wheeler, of West Bay City, Michigan, the lowest bidder, for the reason that the treaty of 1817 with Great Britain does not permit the building of war vessels on the lakes.

Secretary of the Navy Tracy on the 16th inst. awarded the contract for the 8,150-ton armored cruiser to William Cramp & Sons, of Philadelphia, Pa., at their bid of $2,985,000, and the contract for the 5,500-ton cruiser to the Union Iron Works, of San Francisco, Cal., at their bid of $1,796,000. He also awarded on the 17th inst., to Samuel I. Moore & Co., of Elizabethport, N. J., at their bid of $250,000, the contract for the construction of a steel practice cruiser of 800 tons displacement, for which bids were opened on June 10. This vessel is to be a complete man-of-war in miniature, and is intended for use at the Naval Academy in the practical education of cadets. There is some surprise over the Secretary's decision, in view of the fact that the successful bid is $5,000 more than the bid of F. W. Wheeler, of West Bay City, Mich., who is conceded to be thoroughly equipped for the work.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers

in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

892. Shingle machine to cut cypress shingles. North Carolina.

893. Party to establish and operate water-works and electric plant. Georgia.

894. Machinery for canning factory. Florida.

895. Engine, 50 H. P. Boiler, 70 H. P., brick machine, clay crusher, etc. Texas.

896. Tubular boiler, 30 or 35 H. P., planer with 6 feet bed; engine lathe not less than 24-inch swing, and small machine tools. Tennessee.

897. Machinery for a steam laundry. Georgia.

898. Engine and boiler of 12 or 16 H. P., grist mill, shafting, pulleys, etc. Mississippi.

899. Portable boiler and engine, 8 or 10 H. P., mounted on wheels ready for the road. Arkansas

900. Passenger elevators, machinery for steam laundry, and steam heating apparatus for a hotel of 150 rooms. Florida.

901. 15 H. P. self-containing engine with locomotive boiler on skids. South Carolina.

902. Contracts for boring an artesian well and building water works will be awarded, if bonds to the amount of $10,000 are authorized and no opposition is anticipated. Georgia.

903. Prospecting drill and well auger to prospect for coal and other minerals. Virginia.

904. Locomotive 25-pound rails and everything necessary for the equipment of five miles narrow gauge log railroad. Mississippi.

908. Knitting machinery. North Carolina.

909. Outfit for spinning warps, with engine and boiler for driving same. North Carolina.

910. Eight-inch, four-sided molder. Arkansas.

911. Addresses of manufacturers of artesian well machinery. Alabama.

912. Bids on water works and electric light plant. Bids must be submitted by July 1st. Virginia.

913. Machinery for planing mill, exhaust fan, and dry kiln. Tennessee.

914. Outfit for 25-barrel roller flour mill. Tennessee.

915. Steam pump, and machinery for planing, sash, and door mill. Virginia.

916. Pump and boiler with a capacity of 125 to 150 gallons per minute. Alabama.

917. Knitting machine to knit hose. Texas.

918. Bids on acid plant, complete, ready to run. Georgia.

919. Equipment for short street railroad for freight and passenger business. Georgia.

920. Prices on a 5 or 10-ton ice machine, and for boring a well 500 feet. South Carolina.

921. Machinery and tools for polishing soapstone; also mill to grind it. North Carolina.

922. Stone crusher to crush stone for street purposes. North Carolina.

AMERICAN GOODS WANTED ABROAD.

853. Catalogues of machinery and plant suitable for dredging beaches and river beds for gold, together with the appliances (tables, etc.) for saving the gold. England.

854. Catalogues, circulars, etc., of manufacturers of machinery for mining and silver-reduction works. Mexico.

855. Pitchforks, rakes and threshing machines. Prices on large quantities delivered in France.

905. Addresses of manufacturers of barb wire and pulverizing cultivators. West Indies.

906. Machine for hulling castor oil beans. Mexico.

907. A party in Mexico would like to represent manufacturers of plows, cultivators, seed sowers, corn shellers, grain mills, fodder cutters, churns, ice cream freezers, barb fence wire, stretchers and diggers.

GENERAL MINING NEWS.

The Secretary of the Interior, on the 18th inst., sitting with First Assistant Secretary Chandler and Assistant Attorney-General Shields, heard arguments of counsel on a motion to review the decision rendered in February, 1889, by Secretary Vilas, in the noted Sioux half-breed scrip cases of Minnesota, Dakota and Montana The statement authorizing the issue of the scrip declares that any assignment of the scrip shall be invalid. Secretary Vilas, in his decision, held that a location of half breed scrip by a person holding a power of attorney to sell the land, as well as to locate it, was, in effect, an assignment of the scrip, an attempted evasion of the law, and therefore illegal. Some of the cases at issue involve the title to lands believed to be exceedingly rich in mineral; others involve the land upon which the town of Glendive, Mont., is built, and a portion of the town of Devil's Lake, N. D. Among attorneys present for the scrippees were ex-Attorney-General Wayne MacVeagh, of Philadelphia, and General S. S. Burdette, of Washington. The contestants were represented by ex-Representative Knute Nelson, of Minnesota, and D. P. Dyer, of St. Louis; James K. Redington, and Britton & Gray, of Washington.

A new line is building between Chicago, Ill., and Birmingham, Ala. Between Paducah and Birmingham rails are already being laid. The new line, it is said, will be a competitor of the Illinois Central and Chicago & Eastern Illinois, depriving the latter of its monopoly in Illinois coal. It will be the most direct line from Chicago to the coal and iron fields of the South, as well as to all important points. It is not known fully who are behind the movement, but Chicago capital is largely interested, notably Board of Trade men and Chicago iron and steel industries.

ARIZONA.

GILA COUNTY.

FAME SILVER MINING COMPANY.—This company has received complete returns from seven bars of silver bullion shipped to San Francisco, the product of 34 tons of ore from the Fame mine, which gives the total value at $22,058.79, or an average of about $650 per ton. After deducting the entire cost of mining and milling and improvements made, the company was enabled to declare a dividend of $13,137.74. Local papers state that a good degree of efficiency was attained in the milling of the ore, which was under the personal supervision of Paul J. Johnson. Work at the mine is reported as progressing satisfactorily.

PINAL COUNTY.

SILVER KING MINING COMPANY.—The weekly report of Superintendent J. O. Groves for the week ending the 7th inst. shows that 34 men are now employed; the usual amount of development work is being done. The mill is being repaired and supplies ordered, and as soon as they arrive and the mill is ready eight pans and four settlers on tailings will be started.

YUMA COUNTY.

HARQUA HALA.—The sale of these gold mines was completed recently. Frank Kirkland and Thomas A. Cochrane turned over two deeds to A. G. Hubbard and George W. Bowers, each instrument conveying a one-quarter interest in the original Harqua Hala group. They consist of the following claims: Golden Fleece, Golden Eagle, Gold Ark, Gold Belt, Gold Hill, Gold Star and Gold Mountain locations. The Gold Star mill site, situated about six miles distant, is also included. The consideration written in each deed is $5, but the actual amounts paid were to Mr. Cochrane $19,500, and to Mr. Kirkland $18,000. It is understood that the new owners intend to start up active work at once. The ownership is now vested in A. G. Hubbard, who holds a one-half interest and G. W. Bowers and Col. C. H. Gray one-quarter each. There is some trouble over the property at present. A man named Hore has jumped and is holding the Golden Eagle claim, one of the best on the lode. He has been taking out quite an amount of ore, and two weeks ago by arastra took from seven tons of ore the sum of $1,200 in one week.

COLORADO.

COLORADO GAS PETROLEUM COMPANY.—The work of perfecting the organization of this company has been completed. The officers for the first year are as follows: President, Col. D. C. Dodge; vice-president, Benjamin W. Bredin; treasurer, J. W. Gilluly; secretary, Cassius C. Smith; solicitor. W. W. Dale. The directors are: Job A. Cooper, J. B. Grant, D. C. Dodge, George S. Creswell, J. W. Gilluly, Benjamin W. Bredin, E. W. Smith, O. D. Beakly and Cassius C. Smith. The company has a capital stock of $1,000,000. Only the preferred or development stock, amounting to $250,000, has been offered for sale. The company has secured leases on over 20,000 acres within a radius of 20 miles from Denver, and will secure other large tracts in a short time. The land is in tracts ranging from 3,000 to 4,000 acres in extent. The land is in Jefferson, Arapahoe and Douglas counties. The company will have one set of machinery in operation inside of 30 days and another at work 10 days after, or as soon as the drilling outfit can be shipped from the East. It is proposed to sink at least one well to a depth of 3,000 feet or further if indications warrant. Four or five of the wells will be sunk 2,000 feet, and then the one that shows up best will be selected for the deep drilling.

BOULDER COUNTY.

One of the first mines to create an excitement in the tellurium belt, if indeed not the first, says the Denver *Republican*, was the American at Sunshine. Tellurium has been discovered in the Cold Spring at Gold Hill before the American was found. Mr. Fullen, now of Salina, the discoverer of the Ingram mine, was also the discoverer of the American mine, and when its richness became known the town of Sunshine sprang into existence and the mining boom of 1875 was on.

The fame of the American mine spread, and big offers by mining syndicates were refused, for the ore was immensely rich, and there seemed to be a plentiful supply of it. Gradually the excitement died out. The American had struck a cap and no longer paid. Work was shut down; business began to lag. Since then other mines have done well in this vicinity, but the boom of 1875-76 was never again revived. The American was gobbled up in a deal with the Slide mine of Gold Hill, and has been worked only occasionally. One or two spurts at work were made but abandoned. Of late work has been more vigorously prosecuted in this famous producer, and this week a sack of ore was shipped which is said to be worth $5 a pound. Other mines in this same camp have done well. The White Crow, which was in the courts for several terms, both in the State and United States District courts, yielded in three months, with only a few men at work, a net profit to the owners of $30,000. The Inter Ocean, of which nothing is heard now, also once startled the people by its richness of ore and the amount. The Emancipation, not far off, and the Western Slope, between which a law-suit lasted for so long a time, were rich producers. Very little is heard of them now.

CLEAR CREEK COUNTY.

MENDOTA.—This mine is showing some good bodies of lead ore. The different leases on this property show that every one of them is now working on ore, some having a better grade than others. On the fifth level are three leases.

PAY ROCK MILLING AND MINING COMPANY.—A special meeting of stockholders of the company will be held at the office of the company in Denver on July 2d, for the purpose of considering and acting upon a proposition looking to the purchase of the entire property of the company. It appears that a syndicate of English capitalists has been formed to purchase the property and reorganize the company with an incorporated capital of $1,000,000; shares, par value, $5 each. The new company proposes to purchase the now outstanding stock of the present organization and pay therefor at the rate of seven cents per share in cash and 6¾ in the new stock, or about 14 cents in cash and new stock for each share of the old. Then it is proposed to put $50,000 in the treasury as a development fund, and list the stock in London, St. Louis, Kansas City and Denver.

LAKE COUNTY.

LEADVILLE CONSOLIDATED MINING COMPANY.—The lease under which this property is now worked will soon expire, and it is expected that the present management will hereafter work the property. In the last year, under the royalty system, the net returns to the company were over $11,000, and after paying all expenses there remained a balance of $10,000. The company has no bonded or floating debt other than a disputed note for a small amount.

SAN JUAN COUNTY.

SWANSEA GOLD AND SILVER MINING COMPANY.—The important mining suit of E. H. Hackett et al. vs. Charles Newman and this company, which has occupied the attention of nearly the entire term of the late District Court at Silverton, has not yet been settled. The jury was out over thirty hours, and reporting to the court that no verdict could be reached, was discharged. The case will be tried again. The case involves $250,000.

GEORGIA.

(From our Special Correspondent.)

LUMPKIN COUNTY.

HAND GOLD MINING COMPANY.—Captain H. D. Ingersoll, manager, has been getting prices on concentrators with a view to putting them in several mills under his management at Dahlonega, Ga. When we consider that there is at least 1 per cent. to 12 per cent. sulphurets in the ores of all the Hand mines, all of which when concentrated run from about $50 upward to $400, and that this has been run down the creek as tailings, it will be seen that concentration and treatment of the sulphurets will amount to a big thing for the company. An assay of concentrates averaged as carefully as possible gave a fraction over $82 per ton by Torrey & Eaton, of New York.

The mills under that management are the

	Stamps.	Monthly capacity, about
Barlow mill	40	2,000 tons.
Ralston mill	20	1,000 "
Hand mill	20	1,000 "
Yahoola mill	20	1,000 "
Gordon mill	20	1,000 "
Cane Creek mill	10	500 "
Lawrence mill	10	500 "
Capps mill	10	500 "
Aggregating	150	7,500 "

All of which are running except the Gordon and Lawrence, which are to start up at once; they have been temporarily suspended to consider the question of treating the sulphurets to which they have come.

It is estimated that there will be produced about 350 or 400 tons of concentrates to the month with the above plant, which, averaging even $40 per ton (which is much lower than any assay yet made upon them), will amount to $14,000 or $16,000, which is a bonanza. One thing is certain, and that is that something must be done, as the present system of stamping saves less than 25 per cent. of the assay value of the ore.

The operations of this company will be watched with great interest by mining men in Georgia, as if it succeeds it will introduce a new feature into their system of milling.

IDAHO.

ALTURAS COUNTY.

MINNIE MOORE.—Work has been discontinued in this mine below the 600 level for the present,

Above that level work will be continued by leasers, but the company itself will not be directly responsible for any of the cost of working. Its sole concernment will be the receipt of royalties on the ore extracted. Says the Wood River *Times;* "In addition to all the expensive mistakes made and the cost of the plant, which much exceeds $100,000, it costs $50 net every day in the year to keep the water out. This, without reckoning office expenses, pro rata interest on capital invested, etc., would bring the cost fully up to $75 per day. But the Minnie has been draining the whole country. It is surrounded by the Relief and other claims of the Miller Brothers, the Queen of the Hills and others, and none of them are doing anything worth mentioning in the way of drainage. Thus the whole expense falls upon the Minnie.

If the owners of the surrounding claims ever agree to unite with the Minnie in paying the cost of pumping, the Minnie Moore Company will be ready to resume operations throughout the mine, and by making a few connections can drain all its neighbors cheaply and effectually; but until then the Minnie will limit its field of operations to the upper levels.

CUSTER COUNTY.

IDAHO MINING AND MILLING COMPANY.—Mr. T. J. Smith, of Eagle Rock, representing this company, of Rochester, N. Y., has been engaged in looking over the camps of Alder Creek mining district, Big Lost river, in the interests of his company, and has bonded three mines near the town of Houston, the Alice Grand Prize and Superior. Mr. Smith has let contracts for sinking 100 feet on each of these mines. If this development proves satisfactory it will be continued to the depth of 200 feet. The necessary machinery for the purpose of inking the last 100 feet on each of the mines has been ordered from Denver, and will be on the ground in time to continue the work of development from where the contractors leave off. Parties interested think that the contemplated work will develop some good ore-producing properties, and put that section of the country again on its feet.

SHOSHANE COUNTY.

A strike has been made near Raven, about six miles above Murray, says the Mullan *Tribune.* A few days since Messrs. Cater & Darling uncovered one of the richest mineral ledges in the Cœur d'Alene, in that locality. The ledge is traced for a long distance and has been opened on several locations and shows in each opening the same character of ore. Some samples of the ore were assayed in Mullan, running 255 ounces silver and 54 per cent. lead. It is a galena and carbonate ore, and the strike is considered to be one of the most important in the history of the Cœur d'Alene.

MICHIGAN.

COPPER MINES.

(From our Special Correspondent.)

HANCOCK, June 18.

By telegraph, Calumet, June 19th.—The men employed in the mines at Calumet made a formal demand on Assistant Superintendent Watson for a 10 per cent. increase in wages. Upon examination of the books it was found that the miners' wages for the last month averaged over $55. Mr. Watson said he knew an advance of wages was under advisement, and there would be no difficulty in arranging some such advance when the superintendent, who has gone to Arizona, returned. This satisfied the miners, and they promised to go to work; but the trammers were still dissatisfied, and refused to go to work. On Wednesday the men were determined, and say that they will hold out till the end. The Calumet and Hecla men are in sympathy with the strikers, and it looks now as if there might be a great strike of 2,000 to 3,000 men.

ATLANTIC MINING COMPANY.—This company has been putting in a new hoisting engine and gear. An increased output may be expected as soon as things are in working order.

CALUMET AND HECLA MINING COMPANY.—The product of the Calumet and Hecla for the week ending June 16, was 822 tons 1,820 pounds. The work of putting in the motors is progressing well.

KEARSARGE MINING COMPANY.—The exploratory work on this property for the Calumet Conglomerate still continues. They have sunk three pits 200, 250 and 500 feet respectively from the south boundary line of the property and in a direct line with the out-croppings of this vein on the Calumet & Hecla and Centennial properties. The results have been highly satisfactory so far. In each pit the vein was found at a depth of about six feet. It varied from five and one-half to eleven and one-half feet in width—horizontal measure.

A large underground stream of water running along the back of the vein has prevented much blasting. The rock here shows little or no copper, but it seems to be identical with the Calumet rock. The management states that it has not yet decided to sink any shafts, but it is quite probable that it will be done soon. They feel quite confident that they have a valuable find, and certain indications seem to warrant the belief.

RED JACKET, June 19.—All the miners at the Tamarack Mining Company—over 900—struck yesterday for eight hours, in place of ten, and a raise in wages. It is almost certain that the miners in the Osceola, Tamarack, Jr., and Calumet & Hecla will strike some time this week. A later dispatch says: No hope of change till Tuesday.

ST. MARY'S CANAL AND MINERAL LAND COMPANY.—This company is exploring on certain of its lands in town 53 north, range 35 west. The resident agent informs your correspondent that three test-pits have been sunk, but announces no results. There is no doubt in the minds of experienced men that the south end of the range contains copper in large quantities, and that sooner or later startling developments will be made here

TAMARACK MINING COMPANY.—The company is erecting several buildings for its new machinery to be put in at No. 1 shaft. The new stone and brick compressor house is 34×65 ft., and will contain a pair of compressors, 30 and 54×60 steam cylinders and 30×60 air cylinders, built by the E. P. Allis Company, of Milwaukee. A new boiler-house has been built over the two boilers that furnished steam for the engines that run the timber hoist in the third compartment of No. 1 shaft. Two boilers for the compressor plant will be placed in this building. The battery when completed will consist of four Allis horizontal boilers, with a total capacity of 1,000 H. P. The engine-house that was destroyed by fire is being rebuilt, and will soon be completed. All the buildings mentioned will be covered with the Shailer & Schniglair iron truss roof, and are expected to be fire-proof.

MINNESOTA.

(From our Special Correspondent.)

ST. PAUL, June 16.

Northern Minnesota iron mines are beginning to show an unwonted activity, and several parties who have been prospecting on State lands for the past year are now in St. Paul looking toward making 50-year contracts with the State for mining iron ores on some of their properties. While the Minnesota and Chandler mines are undoubtedly the most valuable properties on the Vermillion and Messabi ranges, a number of others are beginning to show extraordinary promise. and on some of these operations are just at present being pushed as never before. The Pioneer, Zenith, Macdonald, Anderson, Camp, James and the Consolidated Vermillion are being developed by their owners; on sections 16, 62, 14, Moore & Co. have a large force of men at work, while near it, on section 10, the Chippewa Iron Company is making some rapid developments. A short time ago this company purchased for $60,000 the Rouch-eleau mine, which now is rated as one of the fifteen best properties on the Vermillion. In fact it would appear from the low prices recently paid for three or four good properties that mines, particularly those between the "prospect" and "mine" stage, are selling at very low figures at present.

The Minnesota State law relating to leases of State lands for mining purposes has now been in operation just one year. This law provides that any party wishing to prospect for iron ores on State lands may lease not more than 160 acres of such land for one year by paying the sum of $25 into the State treasury. No ore is to be removed from this land until a contract is made. At the end of one year from the taking of the first lease the party prospecting may make a contract with the State to mine iron ore on such lands for fifty years, though he may throw up the contract at any time on sixty days' notice. This contract calls for the payment to the state of 25 cents a ton for all ore taken out, and within five years of the completion of a railroad within one mile of the property at least 1,000 tons shall be taken out, and 5,000 tons a year annually thereafter. Until the first 1,000 tons are taken out the sum of $100 a year is to be paid into the State treasury.

Under the operation of this law in the past year, 212 leases, of which Leonidas Merritt, of Duluth, has secured 134, have been issued by the State. George L. Robbins and R. H. L. Jewett, of St. Paul, have taken out 14 more, and, together with a number of others, these parties form a big mining syndicate, which in the past year expended $8,700 in surveys of iron lands, and this season will put in nearly twice this amount. Most of these claims are in the vicinity of tp. 58, r. 19, or in the center of the second iron belt in Northern Minnesota, and on the line of the Duluth & Winnipeg Railroad, which is now being graded. Six 50-year contracts have been made under the new law. and about $50,000 will be expended the first year in preliminary work on these openings, which are said to be very promising. The Merritt syndicate has not made any long contracts as yet, but their year for prospecting has not quite expired.

Parties just in from Mesamoria, one of the newest of the Lake Superior ranges, report the discovery of a vein of black magnetic ore at a depth of 75 feet. This vein is said to be 30 feet wide and to be distinctly traceable for over a mile in length. An assay of the ore is said to show 63 per cent. iron. These mines are located half way between the Wisconsin Central and Rhinelander branch of the Lake Shore and Mesamoria range. The same parties claim to have assurances that the railroad will be built in this section so that half a dozen mines in the district will begin shipping ore this season.

CONSOLIDATED VERMILLION MINING COMPANY.—An executive session of the directors of this company was held on Friday of last week, in which plans were formed for the active development of some of their properties. The directors, after the meeting was over, said that there was nothing to say further than that they were raising a large sum of money, and when that was done they would begin the erection of a number of buildings and take other active steps toward the development of their properties.

MINNESOTA IRON COMPANY.—At the annual meeting of this company, in Duluth, last week, it declared a dividend of 6 per cent., payable quarterly. The company last year made a net profit of $1,300,000, and of this amount a part will be devoted to the building of two steel ships to carry the company's ore to South Chicago and other ports. A stockholder of the company stated to your correspondent the fact, not generally known, that at the annual meeting the proposition to put in a large steel plant at Two Harbors, Minn., was discussed, and, while nothing definite was done, it is not unlikely, from the feeling manifested, that such a plant will be started.

THE WEST SUPERIOR IRON AND STEEL COMPANY.—This company has let the contract for the construction of the iron building of its new Bessemer steel plant to the Pittsburg Iron and Steel Engineering Company. As soon as the foundation, which is 120 by 120 feet on the ground, is completed, the roof and sides, all of iron, will be put up. The contracts for the rolling mill and machinery are soon to be let, and on the Bessemer plant, shop, rolling mill and machinery $500,000 will be expended this season. Fifty tons of metal are now cast daily in making water pipe, and 235 men are employed. The company expects to have 1,200 men employed inside of a year.

MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.)

JOPLIN, June 16.

The lead market in the past week has continued strong, with an upward tendency. the ruling price being $25 per 1,000. Although the price of spelter is kept strong by the demand being equal to the supply, the price of zinc ore has a downward tendency, the ruling price being only $23@$24.50 per ton at the mines. The following are the sales from the different districts as far as reported: Joplin mines, 1,562,160 pounds zinc ore and 135,880 lead; value, $21,384. Webb City mines, 728,190 pounds zinc ore and 62,590 lead; value, $10,199. Carterville mines, 963,240 pounds zinc ore and 122,440 lead; value, $15,338. Zincite mines, 290,930 pounds zinc ore; value, $3,574. Lehigh mines, 118,070 pounds zinc ore; value. $1,470. Oronogo mines, 41,000 pounds zinc ore; value, $502. Galena Kans mines, 800,320 pounds zinc ore and 650,000 lead; value, $25,840.75. All districts, total value, $78,307.75.

Mr. J. B. Paxton, of Kansas City Exchange, is now a resident of Joplin, attending to the business of Matt & Co., during the absence of Mr. O. B. Steen. Before Mr. Steen's departure there was a new partnership agreement made by the aid of Revarent Hackney, according to which the firm now is Mr. & Mrs. O. B. Steen.

Col. Huber, of the Seneca mining district, the owner of a large tract of land which he intends to develop, called on your correspondent and reported very favorably on the Seneca district.

DIAMOND.—The most important mining deal of the week was the purchase of this property from Albert Frye, by H. B. Prime, Morton Waltman, Major Jones, E. L. Martin and J. W. Spence, of Kansas City, and J. E. Vandervirks and J. P. Bausman, of Leavenworth, Kan. The purchase price is $50,000, $30,000 of which has been paid and the balance to be paid on delivery of the deeds of transfer. This comparatively new property has developed very large deposits of lead and zinc. The product of the mine during the three weeks ending June 14th was 434,770 pounds of zinc ore and 142,970 lead. The net profit for the past week was $2,200.

PILGRIM —Judge C. M. Ferre and others, of Kansas City, have just purchased this mine on the Sterling Lead and Zinc Company land, through Chas. Matt & Co., for $12,000. The mine has been a steady producer, is quite well developed and shows a face of 20 feet of ore at some points.

The Snyder Bros. have broken their record by producing 430,270 pounds zinc ore and 20,920 lead.

THE EMPIRE PLANT is again running on full time.

MONTANA.

A dispatch from Washington, D. C., dated the 17th inst., says that nothing has yet been done by Congress toward carrying out the recommendations of the Secretary of the Interior in his last annual report for legislation concerning the mineral lands claimed by the land grant railroads. The vast amounts at stake naturally have stimulated the great railroad corporations of the Pacific Coast to bring all their influence against any Congressional action not tending in the direction of their interest. It is really to their interest that Congress should take no action at all, for if the Supreme Court of the United States should sustain the decision of Judge Sawyer in the United States Circuit Court for Southern California, in December last, the Northern, Central and Southern Pacific roads would immediately take possession of mineral lands of great value. The Northern Pacific particularly would be especially benefitted

by this. The Northern Pacific runs through 800 miles in the State of Montana, and one-half of this distance is through a region abounding in rich deposits of gold, silver and copper. The company under its grant has laid claim to 2,800,000 acres of land, covering 4,000 discovered mining properties bearing gold, silver and copper yet unpatented, and nearly 1,000 patented mines, which have long been in undisputed possession of private owners.

The act of Congress making these land grants to the railroad corporations reserved the mineral lands. The Northern Pacific and other companies claim that this reservation applied only to lands then known to be mineral, and this construction of the act has been sustained by the United States Circuit Court for California. It is the best legal opinion that this is the proper construction, and there seems to be little doubt that the Supreme Court will sustain the Circuit Court. The effect would be in the State of Montana alone to take valuable mines from perhaps three-fourths of the private owners who have been in possession for from ten to twenty years. The act making the grant was passed in 1864, and most of the mineral producing lands have since been discovered. The Secretary of the Interior strongly recommended such provision as would at least secure the private owners in their possessions. If this was done it would still leave to the Northern Pacific Company unpatented valuable mineral lands.

BUTTE CITY NATIONAL PARK AND SOUTHWESTERN RAILROAD COMPANY.—Articles of incorporation of this company have been filed. The termini of the road are to be in Silver Bow, Gallatin and Madison counties. The general route will be from Butte southwesterly, by way of Blacktail, Deer Creek and Pipestone Pass to the Jefferson Valley, thence by way of Jefferson and Ruby Valleys to Ennis, in Madison Valley. The incorporators are all Montana men, with one exception, that of Wallace McWhite. The capital is $1,000,000. It is surmised that the C. B. & Q. is behind the enterprise, which, it is said, is started at this time to get possession of the Pipestone Pass, the only unoccupied pass giving an entrance to Butte.

DEER LODGE COUNTY.

GRAND REPUBLIC MINING COMPANY.—The Lilly group of mines comprising the Lilly, Black Pine, Black Cloud and Orphan Boy, together with a mill site and water right, has been sold to this company of Helena. The Grand Republic was organized especially to take hold of this property, with the following officers: President, J. C. Hallum, of North Dakota; vice-president, Jas. W. Carpenter, of Helena; secretary, G. Newton Cook, of Elmira, N. Y.; treasurer, A. P. Dodge, of Helena; manager, Dan Simpson, of Helena. Other prominent stockholders are John McPhee, Miles Cavanaugh and Jay Comstock, of Helena. The capital is $5,000,000, shares $10 each. It is stated that already 40,000 shares of treasury stock have been placed at $1 per share. The Lilly group is located twelve miles south of Elliston. The new company will begin developments August 1st. The property has been examined by Prof. H. Veeder, of Pittsburg, Pa.; Miles Cavanaugh, of Helena; Jas. W. Carpenter, of Helena; G. Newton Cook, of Elmira, N. Y.

LEWIS AND CLARKE COUNTY.

MONTANA COMPANY, LIMITED.—The report for May shows: Total weight of ore crushed during the month, 7,252 tons; yield from three mills, $97,200; working expenses for the month, $58,000. The estimated number of ounces contained in returns by assay being: Gold, 2,902 ounces; silver, 28,837 ounces. A large amount of exploratory work is in operation in various parts of the mine, with a view of developing additional ore-bearing ground. At the 1,000 feet level, and in the northern part of the mine, the appearance of the ore shoots is of a satisfactory nature.

MEAGHER COUNTY.

FLORENCE MINING COMPANY.—This company has filed articles of incorporation. The company's possessions are at Neihart, and consist of two claims, the Florence and M. & I. The incorporators of the company are Richard G. Wright, A. M. Henry and George L. Johnson, of White Sulphur Springs. The Florence claim is no longer a prospect, but has 400 feet of levels showing up a continuous ore body of high grade ore. Returns on eleven tons shipped to the Great Falls smelter, taken out of the tunnel after striking the ore body in the lower level, gave 102½ ounces in silver and 13 per cent. lead. The company now proposes sinking a shaft on the main ore chute, encountered in their lower level, from which they will run levels to show up the extent of the ore body and place it in shape for stoping. They will also push the lower level forward and make up raises.

The following companies were incorporated at Helena during the week ending on the 12th inst.:

AMELIA CONSOLIDATED MINING COMPANY.—Incorporators: D. B. McIntosh, C. J. Anderson, C. W. Cook, B. W. Badger, and Len Lewis. Place of operations, Montana district, Meagher County.

BIG HOLE LIME AND FLUX COMPANY.—Incorporators: J. C. Cusick, J. H. Vivian, J. S. Shropshire, Harry Rodda, William Bennett, and M. L. Wines. Principal office at Butte.

CASTLE MOUNTAIN COAL COMPANY.—Incorporators: Henry Bevens, G. E. Hailey, J. Potter, Hugh Cameron, and W. B. Gordon. Place of operations, Castle district.

CORNUCOPIA MINING COMPANY.—Incorporators, Paris Gibson, T. E. Collins, Wm. Hanks, Richard Brennan and F. P. Atkinson. Place of operations, Neihart district.

DIVIDEND MINING COMPANY.—Incorporators, W. E. Cox, Owen Evans and B. C. Lenoir. Principal office in Helena.

ELGIN MINING COMPANY.—Incorporators, C. E. Westbrook, L. Peavey, J. P. Rhoades, J. S. Kelley and T. J. Foinlic. Place of operations, Castle district.

ETTA MINING COMPANY.—Incorporators, Charles Young, D. A. Larson, W. H. Barnes, R. W. Peters and L. Peavey. Place of operations, Castle district.

HAMPDEN CONSOLIDATED MINING COMPANY.—Incorporators, C. F. Chapin, J. R. Lewis, Len Lewis and J. L. Fraser. Place of operation, Castle district.

HOMESTAKE AND GOLD HILL CONSOLIDATED MINING COMPANY.—Incorporators, M. H. Anderson, J. T. McGrade, J. H. B. Foster, Pleasant Davis and T. C. Marshall. Place of operations, Missoula.

JUDGE MINING COMPANY.—Incorporators, Wm. Parberry, J. A. Woodson, G. W. Irvin, J. L. Wood and D. E. Folsom. Place of operations, Castle district.

MONTANA MINING AND INVESTMENT COMPANY.—Incorporators, G. O. Kilbourne, G. W. Shaw and M. W. Johnson. Place of operations, Helena.

OPHIR MINING COMPANY.—Incorporators, J. G. Sanders, C. A. Perrin and A. W. Ide. Place of operations, Deer Lodge and Lewis and Clark counties.

POTOMAC MINING COMPANY.—Incorporators, L. Peavey, D. A. Larson and W. B. Gordon. Place of operations, Castle district.

T. V. POWDERLY MINING COMPANY.—Incorporators, G. N Higgins, J. R. Lewis, J. L. Fraser, G. A. Irwin and J. A. Woodson. Place of operations, Castle district.

SILVER BOW COUNTY.

BUTTE AND BOSTON MINING COMPANY.—Besides the new concentrator, mentioned by us last week, this company has arranged for the purchase of four more Bruckner furnaces, which will cost $24,000. When the whole is in operation, not later than Oct. 1 next, it is said the company will produce from 1,400,000 pounds to 1,600,000 pounds of refined copper per month. The 400 ton concentrator and additional calcining facilities will do all this.

NEVADA.

EUREKA COUNTY.

PROSPECT MOUNTAIN TUNNEL COMPANY.—An arrangement is pending between this company and the owners of the Silver Connor mine to connect the mine with the tunnel. The tunnel has an upraise in the direction of the Silver Connor several hundred feet in length. From the head of this upraise to the lowest workings of the Silver Connor mine is a distance of 350 feet. The running of this 350 feet is all that has been done to give the mine the advantage of working through the tunnel. It is thought that an arrangement will be perfected at an early day whereby the two properties will be mutually advantageous to each other. If a satisfactory consolidation of the two properties cannot be brought about, then an understanding on the basis of a royalty for the use of the tunnel is believed to be practicable. In any event the parties are earnestly negotiating, and it is more than probable that an agreement will be speedily reached. The Silver Connor, says the Eureka *Sentinel*, can be worked to a depth of 1,200 feet through the tunnel.

NEW MEXICO.

The tariff on lead ores and lead in ores is expected to be carried through, hence the plan of building large smelting and refining works at Deming has been abandoned. It is believed that the project of building a railroad from Deming through Corallitus will be or is practically abandoned, although 40 miles or more have been graded and ties and rails brought there for it. It has not been decided to blow in the smelter at Silver City. Grant County will be heard from in a way that will attract the attention of the mining world. There are not less than 25 mining districts in the county, several of them already regular and profitable producers. Every known form of mineral deposits exists there, and a truly astonishing variety of ores.

NORTH CAROLINA.

(From our Special Correspondent.)

RUTHERFORD COUNTY.

IDLER GOLD MINE.—It is reported that a syndicate composed of Northern capitalists has purchased this property with a view to developing, and the subsequent erection of a milling plant should their expectations be realized.

STANLY COUNTY.

PARKER GOLD MINES.—The Mecklenburg Iron Works, of Charlotte, N. C., have just completed an estimate upon the erection of the 10 stamp mill proposed to be erected at once at this mine. It will be submitted to the London directors at their next meeting by the manager with the recommendation that it be approved and accepted.

UNION COUNTY.

HOWIE MINE.—The Gilpin County concentrator at work here is hardly satisfactory, as neither the headings nor the tailings are clean. From seeing it in operation on this ore, it seems that it is not adapted to the very fine sulphurettes of this locality, especially after its treatment in the Wiswell Mills, which produce a large percentage of slimes.

The ore carries from one to three per cent. of sulphurettes, quite rich, in a thin film on the faces of the seams and laminations; in fact, it is my opinion that the treatment of these sulphurettes would be found to be quite as remunerative, if not more so, than the simple milling. The tailings from the mill run from about $3 to $25 per ton; an examination of the ore also suggests that the greater part of the free gold occurs mechanically distributed throughout these sulphurettes, and furthermore, as the gold is also very fine, that it is held in suspension by the sulphurettes and does not amalgate readily. To remedy this, plates were dispensed with and drag mills were substituted, but this likewise results unsatisfactorily. The gist of the matter seems to be that a complete, and automatic as far as possible, stamp mill with a concentration plant attached should be erected; the concentrates should undoubtedly be treated on the premises; but they are sufficiently rich, and and the transportation facilities good, to be profitably shipped.

Captain Reeves, the manager and part owner, has also come to about the same conclusion, and it is not improbable that something of the kind will be done before very long. The ore body is 300 or 400 feet wide and about a mile long, there having been sunk on the place about 32 shafts, of which two are over 300 feet deep and about three others over 100 feet. The ore is a dark, compact, silicious slate with frequent seams and laminations; seams of white quartz penetrate it, which, though they do not themselves carry gold to any appreciable extent, indicate the richer portions of the slates. In places the ore body consists of an argillaceous schist altered to water level.

There are two working shafts now, the Neddy and the Bull Face, both something over 300 feet deep, well timbered where needed but requiring very little, as the ore body is extremely hard.

The ore, on coming from the mine, is dumped on sorting tables where the compact slates are picked out and thrown on the dump; the "vein matter" is put through a Blake crusher and thence to two Wiswell mills, of a capacity of about six tons per day each. From here the pulp goes over the concentrator to the drag mills, thence to the settler for the clean up.

OHIO.

COLUMBUS AND HOCKING COAL AND IRON COMPANY.—This company's common stockholders of record June 23d will have the privilege of subscribing for $500,000 of preferred stock at 80 to the extent of one share of preferred for every 10 shares of common which they may hold. The preferred stock will pay dividends semi-annually at the rate of five per cent. per annum. President H. H. Adams is reported as saying in connection with this announcement that the amount of the annual dividend on this issue of preferred stock will be no additional charge to the company over the amount of interest paid last year on the floating debt, which aggregated $25,101, and was included in the item of operating expenses in the company's last annual report for the fiscal year ending March 31st, 1890.

OREGON.

BAKER COUNTY.

Spring work has begun in the placer mines, this county. It is reported that some of the placers yield from $30 to $70 a day to a man by the hydraulic system, and the Nelson claim is cleaning up about $1,000 a day. The hydraulic miners expect this to be their best season for many years, as the heavy snowfall of last winter stored up plenty of water in the mountains.

ELKHORN BONANZA MINE.—Work on this mine in Pine Creek has been in progress for some weeks past, and word has been received that the ore has been struck. The tunnel has been driven in 36 ft., where a 3-ft. vein of free milling ore was tapped, the grade of which is said to be from $75 to $600 per ton, and in character closely resembles the ore of the Baisley Elkhorn, of which it is claimed to be an extension.

PENNSYLVANIA.

LEHIGH ZINC AND IRON COMPANY.—This company has called for redemption 600 shares of the preferred capital stock of the company, numbers 1,801 to 2,400, inclusive, amounting to $60,000. The shares called will be paid off at par in cash on July 1st, after which date they will cease to participate in dividends or profits. This will redeem all of this company's preferred capital stock now outstanding, the total issue having been $240,000.

COAL.

Mine Inspector Williams, of the Third Anthracite Inspection District, of this State, has just completed, in Wilkesbarre, a table of the operations of the coal mines for the last 20 years. During that time there were 110,552,715 tons of coal mined. The smallest output was in 1871, when 3,000,060 tons were mined, and the largest in 1888, when 8,684,493 tons were taken from the earth

There were 1,204 men killed in the many disasters during the 20 years, the largest number killed being in 1884, 907. The smallest number of tons of coal mined for each life lost was 91,655 tons, in 1886. The largest number of days worked any year was 233, in 1888.

The strike in the bituminous coal regions is now ended, and the struggle has resulted in a victory for the miners. Another large mass meeting of the strikers was held at Blossburg on the 19th inst., during the progress of which a message was received from the operators stating that they had decided to concede the demands of the men for an advance of ten per cent. in wages. The reading of the message was greeted with a mighty cheer, and on the 23d inst. 3,000 miners, who for two months have been idle, will resume work. It is believed that this action of the Fallbrook and Blossburg coal companies will force a resumption of operations in the Clearfield districts, and thus terminate the struggle throughout the mines of the State.

OIL.

Thomas. W. Phillips, of Newcastle, the largest individual oil producer of Pennsylvania, sold out his business on the 16th inst. to the Forest Oil Company, a Standard concern. The consideration, it is said, was not quite $1,000,000. This is the most extensive "deal" ever made by the Standard with a single person. The property transferred includes 125 producing wells, with a daily output of 1,300 barrels, and 7,423 acres of Butler County territory, part of which is as yet undeveloped.

The Chief of the Bureau of Statistics reports the total values of the exports of mineral oils from the United States for the month of May, 1890, and during the eleven months ending May 31st, 1890, as compared with similar exports during the corresponding periods of the preceding year, as follws: May, 1890, $4,684,336; May, 1889, $3,988,126; eleven months ending May 31st, 1890, $46,731,661; eleven months ending May 31st, 1889, $45,158,554.

RHODE ISLAND.

Mr. Albert Potter has resumed work at Glocester, on the old Walton gold mine on Page's Hill, on which he did some work in 1877, which did not give satisfactory results. He is sinking a fifty-foot shaft. If the ore holds out at its present assay he will put in machinery for working the mine, or form a stock company. It is stated that the original assay was $22 in silver and $18 in gold to the ton. Mr. Potter recently showed a certificate from the assayers that displayed $10 in gold and $14 in silver. A large lot of the ore is now in the hands of the assayers. The miners have got down about twenty-five feet. A deep interest is taken in the operations. According to reports this mine was worked by John Walton and his followers in the latter part of the eighteenth century. He shipped several barrels of ore to England to have it assayed. Thirteen years ago, in clearing away the rubbish, Mr. Potter's men found drills and sledges that had been used by Walton's miners in the days when they had no machinery. Walton used to say that when the depth of the shaft reached the level of the pond near by the wealth of the mine would be attained. If it continues to improve in the descent as much as it has so far, by the time the shaft shall have reached the level of the pond the mine will be by far the richest spot in the poorest land at Rhode Island. The lode is said to crop out in Burrillville, more than five miles from Page's Hill. The mine was rediscovered in 1847, when workmen of David Page, who was searching for Captain Kidd's gold, accidentally came upon it.

SOUTH DAKOTA.

LAWRENCE COUNTY.

CALEDONIA MINING COMPANY.—At the annual meeting of the stockholders of this company, held on June 21, Supt. Skinner made his annual report, from which are made the following extracts: "All litigation has been finally settled. The same system as heretofore pursued, working without timber, supplying the walls with a system of pillars of ore, is continued. The bullion product of the year has been $304,071.45, the yield of 95,000 tons of ore. The amount milled per stamp per diem, including all stoppages during the year, being 3·25 tons. The expense of mining and milling has been greatly reduced this year over former years by reason of our increased milling capacity and purchasing supplies in large quantities. The ore for the past four months has improved very much in quality. There is now a large quantity of ore developed. The development or dead work in the mine during the past year has been sinking and rising 342 feet, drifting and crosscutting 1,540 feet, at a total cost of about $33,000. The mine and mill are in perfect condition and repair: 95,000 tons of ore, net yield per ton, $3.21; mining, $1.71; milling, 74 cents; contingencies, 14 cents; total, $2.59; profit per ton, 62 cents.

(From our Special Correspondent.)

THE NORTHERN BLACK HILLS.—Fourteen years since, when I first entered this mining camp, I heard many an old-time prospector from Nevada, California and Montana assert that no gold-bearing quartz worth working would ever be discovered. Many of those same men left the country as soon as it was definitely ascertained that the placer diggings were limited in area, and would undoubtedly be worked out within a comparatively short period.

To the tenderfoot really belongs the distinction of discovery of the Homestake group of mines, as well as many other locations; especially in the Northern Hills, which to-day take rank among the best in this section. But the early history of the Black Hills is familiar to every one interested in gold and silver mining; so I will refrain from dwelling on that, and give your readers a concise and truthful account of the progress and development I now find here after an absence of six years. Of course the Homestake property is really the backbone of the Northern Hills.

It was on this property that the late Sam McMasters first proved to the satisfaction of the world that low grade ore could be worked profitably. Until he came here as an expert and afterward took charge as superintendent, ore which paid less than ten dollars a ton was considered practically worthless. To-day the fact that one hundred and fifty-two dividends have been paid, aggregating $4,543,750, proves his theory, that with sufficient facilities low grade ore could be worked profitably. His belief in the extent of the ore body has also been verified, for at the present time ore is being mined all from the stopes on every one of the one hundred foot levels down to the lowest, six hundred feet from the surface.

The prospecting work, which is kept considerably in advance of developing work, shows a body of ore sufficient to keep the stamps pounding away at the rate of three tons a day to the stamp for many years to come. From 50 to 60 samples are taken each day, which show an average of about $4 per ton, while the cost of mining and milling, together with all incidental expenses, is in round figures $2 a ton. In speaking of the Homestake, I have only referred to that property known as the Homestake and Old Abe proper. The Highland, Deadwood-Terra and De Smet are often confounded with the Homestake. In reality each of these mines with adjacent properties belong to separate and distinct companies, although virtually under same management. On the Homestake proper there are two hundred and forty stamps; on the Highland, one hundred and twenty; Deadwood Terra, one hundred and sixty, and De Smet, one hundred. These properties, including the Caledonia, owned by another and distinct corporation, really form the belt of free milling gold bearing ore of the Black Hills, so far as known at the present day. To the north of this belt the discoveries for the most part proved, on development, to be pocket formations, which were worked out years since, and to-day lie idle and apparently worthless. To the south the vein, if present, is so deep that no one has yet had the nerve or capital to sink to it.

In extent this belt is about three miles in length and from a half to one mile in width. But the center of interest to-day is the refractory ore district, comprising the Ruby Basin, Bald Mountain, and Nevada Gulch properties. This district, so far as at present known, extends at least twelve miles in either direction from the center. Within its boundaries are located such well known properties as the Portland, Snowstown, Ross Hannibal, Golden Reward, Isadorah and many others, which give indications of being as rich as any of those I have mentioned, but owing to the fact that no reduction process has been, until lately, in operation here by which the gold or silver contained in the ore could be saved, little work other than assessment work has been performed. Sufficient though is known of this district to establish the fact that the formation is a blanket or flat, and that the ore is found in stratas, apparently extending throughout the entire district. As to the depth of the ore-body any opinion must be speculative, because about 200 feet is the deepest shaft which has been sunk. In fact, at the present time no conservative man will claim other than but little more than prospect work has been performed. Lately two reduction plants have been built in Deadwood for the purpose of treating this refractory ore; one the Mears chlorination process, the other the pyritic smelting process.

During my visit recently both these works were shut down, after having made what were claimed to be successful runs on ore taken from different mines in the district.

The chlorination works have a capacity sufficient to crush 50 tons a day, but with the present barrel capacity they cannot leach more than 25 or 30 tons.

The pyritic smelter can roast about the same amount. Both processes, it is claimed, have proven successful experiments, and from now on the works will be kept running to their full capacity. As most of the ore from this district carries almost as much silver as gold, I believe the pyritic process will be the most popular, because both metals are saved in the matte, while by the chlorination process only the gold is saved. All assays of this refractory ore establish the fact that it is very rich, averaging, at a conservative estimate, $18 to $20 a ton.

The cost of reducing by the Mears process is at least $10 a ton; and it is claimed 90 per cent. of the gold can be saved. The report from both these works have stimulated the owners of properties in this district to move thoroughly, prospect and prepare to develop their locations, and undoubtedly within the next few months the outside world may look for some positive knowledge of the actual value of this district.

The smelter at the Iron Hill, after lying idle for some time, was fired up a few weeks back and made a run, the result of which I saw stocked up in front of the First National Bank of Deadwood, in the shape of several hundred bars of silver bullion. Of this mine no one can predict the future, because part of the stockholders and the present management are fighting, and the prospects are that the quarrel will be carried into the courts. At the recent annual meeting the Bullock faction, as the adherents of the present management are called, scored a partial victory over the Anti's, and the meeting for the election of directors was adjourned until July 8th. The Anti's are loud in their denunciation of the Bullock management, while that faction says nothing, but apparently continues to saw wood. The result is being watched with anxiety by both interested and disinterested parties. Of other properties in the Northern Hills but little can be said; the locators and owners are still doing about the same as they were when I left here six years ago so far as any outward display is concerned. They keep up their assessment work and wait. The army of old time prospectors has visibly diminished in numbers, many of them having left because of their prejudice against the railroads which are invading the territory they have hitherto roamed over at will in company with the faithful and patient burro.

The Caledonia, which when I left was closed down, I found apparently enjoying a new lease of prosperity, with the mill running at its full capacity, and the stockholders receiving dividends instead of paying assessments, as in days gone by. In a hurried visit such as I paid it is impossible to see all that is going on in this mining camp, but I saw sufficient to warrant the assertion that future prospects in the Black Hills, at least the northern portion, are brighter than in '84, and that with increased railroad facilities this promises to prove as rich a country in proportion to its size as any in the United States. I go to the southern portion from here, where I expect to devote sufficient time among the different tin properties to give a perfectly reliable account of the developments in that district.

UTAH.

SALT LAKE COUNTY.

A company is being organized in Salt Lake City to develop a graphite mine within 30 miles of that city.

WASHINGTON.

SNOHOMISH COUNTY.

Another discovery of coal is reported to have been made two miles south of Snohomish. D. W. Dilty, was attracted by little lumps of coal scattered among the rocks along the bed of a little stream. Mr. Dilty traced the coal float to the vein at the source of the stream. The vein is five feet wide and the coal is said to be of good quality.

WEST VIRGINIA.

MARION COUNTY.

It is reported that two veins of iron ore have been discovered near Fairmount, and if they prove to be so rich as thought blast furnaces will be started there. Limestone and coal are found within one mile of the ore veins, and transportation facilities are ample. A company has been formed to fully investigate the deposit.

WISCONSIN.

BAYFIELD COUNTY.

As briefly recorded last week, it is probable that several copper mines will be opened at Drummond, near the Eau Claire lakes, 44·9 west. Men are already at work on a quarter owned by a woodsman named Mell Farr. The pine has all been cut and the timber burned over. The specimens which have been assayed are reported to run rich in copper and silver. The vein has been traced for a distance of over three miles, and Lyman M. Comstock, one of the heirs of the big Comstock estate, which includes a large amount of land in Northern Wisconsin and Minnesota, will visit the explorations with Mr. Joseph Stevens, who has been quite active in making the explorations in this vicinity. Mr. Comstock proposes to put in machinery and prosecute the work vigorously if the reports prove to be what is anticipated. The copper found is what is called shot copper. There is also a large amount of iron ore in sight.

FOREIGN MINING NEWS.

CANADA.

PROVINCE OF NOVA SCOTIA.

(From our Regular Correspondent.)

GOLD.

GAY'S RIVER.—Philadelphia capitalists, who have been testing the auriferous cement, referred to some time ago, and took up several hundred acres of ground, are, it is stated, about to commence work, and will shortly begin to build a 50-stamp mill. The returns show that in 1874 and subsequent years large lots of rock yielded, in an indifferent mill, from two to six dwts. per ton. As the cement can be cheapiy quarried, there is no doubt that these results can be improved on by careful milling on a large scale.

OLDHAM.—The Lowell & Andrews and Baker mines were sold by the sheriff, as the outcome of a long lawsuit, and realized $23,000. The former

has been profitably worked for a number of years, and work will now be pushed more briskly.

SOUTH UNIACKE.—A trial crushing of 12 tons of quartz yielded in the Thompson mill 256 ounces of gold.

COAL.

Work continues steady at most of the mines, and complaints are heard of a scarcity of coal cutters. The Cape Breton district offers an unusually good field for the introduction of mechanical coal cutters. It is expected that the new railway from the Pictou coal field to Oxford on the Intercolonial Railway, near Springhill, will be open in a few days. The saving in distance amounts to about 10 miles for coal going to Quebec as compared with the present route, but the heavy rise of 600 feet in 16 miles over the Cobequid Hills via Truro is avoided.

PROVINCE OF ONTARIO.

(From our Special Correspondent.)

PORT ARTHUR, June 16.

A rich find of silver has been made on the McPherson Farm, three miles northeast of the Beaver mine, and quite close to the "Champion" location.

Oliver Dannais left town yesterday with a gang of men to develop a vein on the Indian location, near Silver Falls. A 30-foot shaft has already been sunk on this vein. Assays from the bottom gave very encouraging results.

A new discovery of black oxide of manganese has been reported. Samples have been brought in within a few days assaying about 45 per cent. The vein is said to be 18 inches wide and well defined. It can be traced for a considerable distance. This is the second find of manganese in the Port Arthur district this season. Experts are now investigating one of these veins.

Prospectors are turning their attention to the country between Nepigon Bay and Peninsula Harbor, along the north shore. Several good gold veins have been located, notably the Macon Valley veins, situated three miles north of Jackfish Bay station, on the C. P. R. These veins were located some time ago by P. McKellar, M. E., etc., Fort William. Free gold has been washed out in the pan, wherever tried, on either of the veins; assays show from $37 to $90 per ton.

The Elgin Mining Company of St. Thomas, which owns some locations in the same neighborhood, intends to work one of them this year. Several large veins of Galena and Iron pyrites, carrying about two per cent. nickel, have also been located near Schreiber.

BADGER SILVER MINING COMPANY.—Development is being vigorously prosecuted upon the new vein, referred to in my letter of last week, 350 feet to the northward of the old vein, Badger No. 1. From all indications the new find is the main vein from which the old vein, out of which about $250,000 worth of silver was taken in 1889, was a stringer. The new vein measures five feet in width, is heavily mineralized, and carries an average of 1,757 ounces of silver to the ton; as far as prospected, it is steadily increasing in richness and promises to exceed in value anything hitherto opened in this district. The same vein has also been discovered by cross-cutting on the west side of the mountain, 2,500 feet from the discovery shaft. It has the same width there and carries equally rich ore with that at the point of first discovery. A steam hoisting plant has been put to work at No. 1 end or discovery shaft. Sinking and drifting is being vigorously carried on on both sides of the mountain. The force of miners has been largely increased, and the output of the Badger for the coming season may be expected to exceed anything in the history of silver mining on the north shore of Lake Superior.

BEAVER MINING AND MILLING COMPANY.—The Beaver mill is now working night and day on high-grade ore. The concentrates are being barreled and sampled ready for shipment to New York. The next shipment will consist of a mixed carload, to be completed about the 20th inst., of smelting ore and concentrates, part of which is now at Murilla Station, Canadian Pacific Railway. All the stopes are now being worked. The force of men has been increased.

MURILLA MINING COMPANY.—The water has been pumped out of the main shaft. The report on this property made by Chas. Brent, M. E., last week is understood to be so favorable that operations will go on at once on a much larger scale than before. Mr. R. Winder, the representative of the English owners, left for England on the 10th inst, his brother, Mr. J. Shaw Winder, manager of the mine, on the 14th inst.

NORTH SHORE MINE.—Work has again been commenced on this property under the management of Captain Johnson. The property is owned by wealthy St. Paul capitalists, who intend to develop it thoroughly. The operations carried on there last year gave entire satisfaction, and this season's work will no doubt do the same, as everything is being done on a much larger scale.

SILVER STAR MINING COMPANY.—Mr. M. P. Adams, manager of this company's property, situated in the Whitefish lake mineral belt, arrived from Perth yesterday, and went out to the mine to-day with a force of miners and supplies. Development work will be proceeded with, and it is believed that good results will follow, as they have a strong, well mineralized vein, carrying zinc blende, galena, fluorspar and leaf silver on the surface. It is three feet wide, and can be traced for over a thousand feet.

WEST END MINING COMPANY.—The annual general meeting of this company has been called by H. N. Nichols, president, to be held in Port Arthur, on July 14th, for the election of directors, etc. Development work is being carried out at the mine under the direction of Achille Falco, M. E. Two good blocks of ground are opened up; no stoping is being done. The company's energy is all bent on sinking and drifting, and when the time is ripe for working the stopes, a large output of very high-grade ore may be looked for.

(From our Special Correspondent.)

RAT PORTAGE, June 14.

LAKE OF THE WOODS MINING DISTRICT.—The mining outlook in this district was never more promising than at present, and numerous parties of explorers and prospectors have gone forth in search of the precious metals, and almost every day heralds the return of some lucky individual who has discovered a promising lode.

Reduction works with the most approved modern machinery are about completed in Rat Portage, under the supervision of J. H. Powers, and will be ready for the treatment of ore of all kinds by August next.

BULL DOG.—This location, owned by Mr. C. S. Morris of Toronto, is being prospected and the land cleared for the erection of buildings, and active mining operations will shortly be commenced.

HENNESSY.—This location on Sutland Island has been sold to an English syndicate, represented by John F. Caldwell, of Winnipeg, Manitoba, for the sum of forty thousand dollars, who will commence to develop it at an early date.

ONTARIO MINING COMPANY.—This company's prospect, a surprisingly rich lode on the surface, was recently sold to the Canadian Pacific Mining and Prospecting Company, of London, England, of which the well known firm of mining engineers, Messrs. John Taylor & Son, are the promoters, and they are pushing forward the work of development rapidly, with night and day shifts, for the past two weeks, and the shaft, which is now down to a depth of 25 feet, exposes a vein several feet in width carrying free gold in large quantities. Shaft houses and other buildings are being erected and the company will push operations to the fullest extent, and will, no doubt, ere long have a large amount of machinery and plants for the production of bullion. Mr. N. Coward, of London, England, a well known mining engineer, is in charge of the work.

STEWART.—This location, near Rat Portage, on the main line of the Canadian Pacific Railway Company, is being developed under the supervision of Mr. Chas. E. Eschweiler for a Milwaukee syndicate, and at a depth of 25 feet has shown good prospects.

FRANCE.

At Pas-de-Calais a stratum of coal was discovered in 1720, and worked since then with changing success up to 1885, when the mine was completely abandoned. Mr. Breton, of that locality, who is a geologist as well as an engineer, purchased the mine in 1888 for 16,500 francs, and recommenced operations with energy. To-day the mine is estimated worth between two and three million francs.

MEXICO.

MEXICAN ONYX CO.—This company was formed at the law offices of Foster & Thomson, New York, on the 17th inst., with capital of $1,500,000. A syndicate of Western men who are said to control the United States National Bank of Chicago, and a number of other financial institutions in the West, are interested in the company, which is actually a trust or combination to control the production and price of Mexican onyx. Among the members of the syndicate are Zimri Dwiggins, of Chicago; George W. Miggs, Alvah E. Davis, J. M. Starbuck and William Cooper. Mr. Davis is said to have brought about the combination.

The syndicate claims to control all the variegated onyx mines or quarries in Mexico, which, since the exhaustion of the onyx mines of Oberstein, Germany, have furnished almost the entire output of the stone. A variety of white onyx is produced in the United States, but none of the variegated stone has been discovered here in any considerable quantity. It is understood that five properties are absorbed by the trust, and it is claimed to be the intention to reduce the cost of onyx by improved mining and transportation facilities. Heretofore, the Mexican mines, which are mostly in the State of Pueblo, have been worked by Indians and peons, and the product brought over the mountains on ox carts and by other primitive means of transportation. The new company will change all this and will have all its own vessels plying between Vera Cruz, the nearest shipping point, and New York, Havre, Liverpool, Hamburg and other seaports. It is within a few years that onyx has been used for ornamental building purposes in this country, and its price now is something like $14 a cubic foot. The trust expects to sell it hereafter as low as $4 per cubic foot. A cargo of the stone, valued at $80,000, was received at New York on the 17th inst.

SOUTH AMERICA.

PERU.

LONDON AND PACIFIC PETROLEUM COMPANY.—The petroleum industry of Peru, it is believed, is now likely to develop into a very important business. The above company has been formed for the purpose of developing and pushing the oil interests of the country. It has a capital of £200,000. A tank steamer has already been dispatched. The Peruvian corporation has resolved, it is said, to adapt all the locomotives on the railways to the consumption of this liquid fuel.

MEETINGS.

Bunker Hill Mining Company, at Central City, South Dak., June 24th, at 2 P. M.

San Miguel Gold and Silver Mining Company, at No. 63 Drexel Building, New York City, June 30th, at 11 A. M.

DIVIDENDS.

Daly Mining Company, dividend No. 40, of 25 cents per share, $37,500, payable June 30th, at the office of Lounsbery & Co., Mills Building, New York City. Transfer books close June 25th.

Edison General Electric Company, quarterly dividend of 2 per cent. payable July 3d at No. 44 Wall street, New York. Transfer books close June 23 and reopen July 5th.

Homestake Mining Company, dividend No. 143 of 10 cents per share, $12,500, payable June 25th at the office of Lounsbery & Co., Mills Building, New York. Transfer books close June 20th.

Horn Silver Mining Company, dividend No. 18 of 12½ cents per share, payable June 30th to stockholders of record June 25th, at No. 56 Broadway, New York City.

Mammoth Mining Company, dividend No. 19 of 10 cents per share, $40,000, payable June 20 at No. 251 South Main street, Salt Lake City, Utah.

Ontario Silver Mining Company, dividend No. 169, of 50 cents per share, $75,000. payable June 30th, at the office of Lounsbery & Co., Mills Building, New York City. Transfer books close June 25th.

Ruby Silver Mining Company, interest coupons upon the bonds of this company maturing July 1st will be paid at the Farmer's Loan and Trust Company, 20 William street, New York, on and after July 1st.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Aztec, Mich	....	May 10	June 10	June 25	10
Belcher, Nev	39	Apr. 29	June 3	June 24	.50
Best & Belcher	46	May 13	June 17	July 8	.25
Bodie, Cal	....	May 21	June 25	July 16	.25
Challenge Con., Nev	6	May 14	June 17	July 8	.50
Confidence	16	May 10	June 13	July 2	.75
Con. New York	3	May 22	June 26	July 17	.15
Dexter, Nev	1	May 29	July 1	Aug. 1	.08
Found Treasure	6	May 22	June 26	July 18	.25
Gould & Curry, Nev	64	Apr. 28	June 3	June 26	.30
Guasucaran & Cal., C. A	1	Apr. 2	June 3	June 24	10 00
Hartshorn, S. Dak	5	May 24	June 30	July 19	.00½
Holmes, Nev	12	May 19	June 24	July 15	.25
Mexican, Nev	....	May 13	June 18	July 9	.25
Morning Star, Ariz.	1	Apr. 30	June 5	June 25	.02
Occidental Con. Nev	6	Apr. 28	June 6	June 30	.25
Seg. B. & Mides., Nev.	6	May 5	June 9	June 30	1.75
Sierra Iron, Cal	7	Apr. 17	May 29	June 23	.20
Sierra Nevada	97	May 10	June 12	July 2	.50
Stanard Con., Cal	3	June 2	July 15	Aug. 9	.50
Teresa, Mex	1	May 9	June 13	June 30	.10

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Minneapolis, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 723 and 724.

NEW YORK, Friday Evening, June 20.

Mining brokers who enjoy a life of delightful idleness must be in their glory just now. The week under review has been indeed a quiet one and devoid of all things that go to make it an active market. Features of interest are apparently unknown to the local exchange.

The weather has been accused—whether justly or unjustly we are unable to say—of being to blame for the general lassitude. "A summer market," says one dealer. "Stocks show that 'tired feeling' that patent medicine advertisements tell about," says another, and so on *ad nauseam*. We are thus favored with excuses and explanations, appallingly numerous but surely brilliantly ingenious.

To say that absolutely nothing is doing in mining stocks would not be correct: we do not wish to convey this idea to our readers. But when we say that the market has not been active, we state the plain, unvarnished truth.

Interest in the passage of the Silver Bill has somewhat subsided. It is evident that it is no longer regarded as a panacea. Indeed, some brokers, whose minds are inclined towards scepticism, are of the opinion that nothing will ever put mining here on its feet again, and that instead of seeking a remedy the *coup de grace* should be sought. The optimists think that within a few

months all mining shares will be selling at double the present price. Both of these are exaggerations.

We do not believe that any one measure devised by Congress will make every mining broker in this city wealthy. But, on the other hand, there is but little doubt that the mining industry is on the whole prosperous, and there is every prospect that this prosperity will increase proportionately to the development and exploitation of our mines. Capital is wanted in certain mining districts, but the public will not invest its money unless it has some reason to believe the investment will result in profit to the investor. Legitimate mining will restore confidence, but manipulation in worthless stock, in order that a few may win and many lose, will not attract customers.

It is understood that the Committee on Mining Securities has had and actually has before it some applications for the listing of the stock of some mining companies, whose names, however, are so zealously guarded that it is quite impossible to discover anything concerning them. Of course, it would be manifestly improper for the committee to impart information which is premature, and which might redound to the injury of some one. We have good reason to believe that at least one application has been refused by the committee, the refusal being based, we suppose, on the fact that the merits of the alleged company were not visible to the committee.

We congratulate the Committee on Mining Securities on this decision. Let it continue to show that it desires the success of legitimate mining as opposed to gambling. The ENGINEERING AND MINING JOURNAL heartily indorses any action which results in the keeping out of worthless mines, and let the good work go on to the point of cutting off some of the worthless things that are now on the Exchange.

Of the Black Hills stocks, Caledonia sold 500 shares $1.90@$2.00; Deadwood Terra shows a solitary transaction at $1.50

Alice is still a prime favorite. One thousand shares of this stock were sold during the week at $2.70@$2.80. Moulton is becoming quite a stranger no dealings in it having taken place for some time.

Silver Mining of Lake Valley was quiet at 44@45c.

In Ruby Silver Mining Company (bonds) we note a sale of $500 at 102.

El Cristo was neglected at $1@$1.05. Rumors of coming great things in this stock are once more rampant, but they remain unsubstantiated by positive information.

San Sebastian repeated its performance of last week, and shows two sales at 20@30c.

Rappahannock, strange to say, shows no transactions.

Quicksilver preferred sold at $43@$43.50, and Common at $7 75@ $8.50.

Standard Consolidated was quoted at 10@14c., at which price 1,800 shares were sold.

Bodie Consolidated Mining Company has levied an assessment of 25 cents per share, delinquent at office on July 22d, and delinquent sale August 22d.

Plymouth opened at $8.13, but at the close sold at $7.50. The management informs us that the ore recently discovered (see our last week's issue), averages $12 a ton, or $2 more than was expected. Superintendent E. L. Montgomery, the former superintendent, is back to the property.

Astoria disposed of 2,500 shares at 4c. Sutter Creek shows a decline, having closed at $1.35.

Brunswick Consolidated went down from $1 to 94 c., and closed at 95c. It fluctuated during the week. The official list records 11,500 shares sold at 94c.@$1.25.

Phœnix of Arizona has declined to $1.25 and was not much dealt in, that is, comparatively speaking, Over 6,000 shares were sold.

The statement has been made that the "deal" is over. The same people who say this said the same thing when the stock rose to 50c., 80c., $1, $1.25 and $1.50. A group of men gathered about Mr. A. P. Morrison, who has lately been in Arizona. The excited queries that showered upon him bear testimony that Phœnix is of interest to many men on the Exchange. We are informed that a valuable deposit of ore has been discovered near the surface 150 feet east of the C shaft. This means that the black ledge is considerably wider than it was supposed. The company has been trying to devise some means of controlling water power which will enable it to run a greatly increased stamp capacity. A satisfactory solution has been reached.

Minnesota Iron Company sold 983 shares at $87 @88.50, an advance of $2 over last week. The company has declared a quarterly dividend of 1½ per cent. on the capital stock, payable July 1.

Horn-Silver was firm at $3.35@$3.50. Ontario shows two small sales at $45@$45.25. Stormont was not dealt in.

The copper stocks have again absented themselves from the board. They appear to be too high-priced for those who desire to speculate on violent fluctuations.

Colorado stocks seemed in demand during the week. Adams was not touched. Chrysolite was quiet at 40c. Freeland declined steadily from 63c. to 55c., closing at this price after selling 3,000 shares. Leadville Consolidated at 11@12c.; some 22,400 shares were disposed of at that price. Of Little Chief, 800 shares at 31c. Silver Cord was once more a visitor and left 700 shares at 45@50c. Small Hopes at 85@90c. shows sales of 1,200 shares.

Mutual smelting and mining has returned and was traded in at $1.55@$1.60.

Consolidated California and Virginia shows considerable fluctuation, but is, nevertheless, higher than last week; at from $4.70 to $5.25, 1,500 shares were sold. Crown Point declined a little and sold at $3@$3.30. Gould & Curry shows a good advance; opening at $2.70 and closing at $3. Hale & Norcross was quiet at $3.15@$3.40. There is a solitary sale of Yellow Jacket at $3.20. Alta was stationary at $1.40. Chollar was in a declining mood at $4.40 @ $4.10. Consolidated Imperial was quiet at 50@60c.

Julia was firm at 55c.

Mexican at $3.60@$3.70 was quiet.

Utah advanced from $1.15@$1.25.

Ophir was traded in at $4.55@$4.80.

Bullion advanced from $3.50 at the close to $4.25.

Comstock Tunnel reports two sales at 17@18c.

The bonds and the scrip were not dealt in this week.

Belle Isle opened at 80c., advanced to $1, but at the close sold for 90c. Navajo was quiet but firm at 55c. Independence appeared this week with one sale at 25c. Kentuck at $2 shows one sale.

Boston. June 19.

(From our Special Correspondent.)

Copper stocks continue to be the special feature in this market, and the demand for them for both speculation and investment is unabated. The better class hold their own as to price, and in some cases record an advance over last week. The purely speculative list has a growing tendency to higher prices, and it is quite evident that the advance in these has only begun.

At the new stock exchange quite a lively business is daily transacted, especially in the fancy copper stocks, which offer great opportunities for making quick turns with but little money. There is a quiet absorbing of the dividend-paying stocks, and it is difficult to fill large orders without putting up prices.

Calumet & Hecla touched $321 this week after selling off to 314½ and closed to-day at $318. The stock is strongly held and very little is offered at present prices. The output last week was 823 tons. With the continued advance in ingot copper and the high price which is liable to be reached for it the present year, it does not seem very much out of the way to predict $500 for the stock within the next twelve months.

Tamarack sold up to $227 this week, the highest point reached as yet for this stock. The advance was not maintained, however, selling off to $219 to-day. We belive it to be a splendid purchase at these prices and will pay large dividends for the money invested in it.

Boston & Montana sold as high as $67.50, declining to $65.50. At present these figures seem to be the top prices, as there is considerable stock ready to come out on every advance. We look, however, to see it sell very much higher during the year 1890.

Butte & Boston sold at $26.50 early in the week, but has been a little heavy the past few days, declining to $24.75, without any apparent reason. The improvements going on at the mine, will, it is expected, put the company on a dividend-paying basis by October 1st, 1890.

Kearsarge opened very active early in the week, and sold at $26, since which it has declined to $23½. A well known copper man says he knows the Kearsarge has struck the California conglomerate, and that they are digging pits to ascertain the best locality for sinking the shafts.

Centennial is quite strong at $39@$40, although to-day, under pressure to sell the stock, it declined to $38. Latest advices from the mine say that the bottom of the shaft is rich and gradually growing richer.

Osceola touched $48⅜, closing off to $46¾. The outlook at the mine is very promising, the Opechee end of the mine furnishing very rich rock.

Quincy, after declining to $125, advanced to $132½, the highest point yet. The output for May was 425 tons.

Atlantic sold up to $28, and is very firmly held. Franklin is inclined to be heavy, selling off to $20¾ to-day, the lowest price for the week.

Quite an active demand is noticed for Central, which advanced to $33, a rise of $8 per share for the week.

Among the minor stocks we note an active demand for Arnold, which advanced from $1.60 to $2¼. Allouez has been quite largely dealt in. at $7 to $8, and closes firm at $7¾. Orders are said to come from the lake.

Bonanza steady, at $1.10@$1.15.

Huron sold at $6, and $4¾ as the extremes. Considerable stock is offered at about $6, which prevents an advance beyond that figure.

National has been very dull, at $3@$3¼.

Ridge sold at $2, but declined to $1½.

Santa Fe continues to rule heavy, and all efforts to advance the price seem to be fruitless. There is too much of it; 500,000 shares is too large a capitalization for any mine, and the sooner it is put upon a lower basis the better. Stock sold at 95c., and to-day declined to 80c.

The fancy stocks have all been active at improved prices. We note sales of Aztec at 25@50c.; Dana, 40c.@45c.; Hanover, 52½c.@60c.; Humbolt, 50c.@75c.; Hungarian, 45c.@60c.; Native, 25c.@35c.; Pontiac, 45c.@60c.; So. Side, 30c.@37½c.; Star, 37½c.@40c.; Washington, 40c.@50c. The silver stocks had there turn this week with an advance in Catalpa from 40c. to 57c., and Crescent from 15c. to 22¼c. Dunkin sold at 66c. and Breece at 40c.

By Telegraph.—Calumet, $315; Tamarack, $218; Quincy, $128; Boston & Montana, $65¾; Osceola, $46¼; Centennial, $38; Atlantic, $26¾; Franklin, $21 bid; Allouez, $8¼; Kearsarge, $24; Butte & Boston, $24; Arnold, $2. In the general market there was covering.

Denver. June 16.

(From our Special Correspondent.)

Market steadily improving. Orders from sections of the West, as well as many from the East, are increasing in volume, and general confidence is being restored towards many of the listed properties. Building projects will soon become a fact, offers for bonds having been made at par. Directors expect higher offers. Many promises have been made to take up the balance of the 100 $500 certificates of the Exchange amongst some of our best merchants, which will add considerably to the permanency of the Exchange's future.

Prices and sales during the week ending June 14th, 1890:

Company.	Opening.	H.	L.	Closing.	S.
Alleghany, Colo.	20b	20	16	13b	1,000
Amity, Colo.	06½b	*08½	06	08	4,100
Bangkok, C. B., Colo.	13½	14	12½	12¾	9,400
Bates-Hunter, Colo	40	4*	38	41	19,200
Brownlow, Colo.	12½b	13½	13½	12¼b	100
Calliope, Colo.	42b	41	40	40½b	2,800
Cash	29b	29	26	*29	4,200
Clay County, Colo.	30a	23	19	20¼	2,400
Hard Money, Colo.	04½b	06b	03b	06b	.....
Little Rule, Colo.	*51	*53	50	50b	5,100
Matchless, Colo.	200a	....	....	....	.....
May-Mazeppa, Colo.	68	*72	68	69	21,500
Mollie Gibson, Colo.	5b	100a	....	....	.....
Oro, Colo.	600b	600b	400b	550b	.....
Pay Rock, Colo.	05¼	*10	05	07¾	46,200
Puzzler, Colo	*20	*24	16	21	10,600
Reed-National, Colo.	69b	72	70	72	3,100
Silver Cord, Colo.	40a	50a	....	38a	.....
Whale, Colo	24	29½	24	29½	1,100
PROSPECTS.					
Argonaut, Colo.	18b	18b	15	14b	1,700
Aspen United, Colo.	08¼	10	08½	10	3,300
Big Indian, Colo.	11b	12	11½	11½	1,900
Big Six, Colo.	*11	*11	09	09½b	3,300
Claudia J., Colo	06¾b	08	07½	07¾	6,600
Nat. G. & Oil, Colo.	22b	†27	23	22b	300
Diamond B., Colo.	07½	*10	07½	07½	56,400
Emmons, Colo.	13½b	†21	17	16b	400
Golden Treasure, Colo.	12b	14	13	14	1,100
Ironclad, Colo.	23½	*25	22	23	4,800
John Jay, Colo	12b	12	12	12	2,200
Justice	....	15½	14½	12½b	35,200
Legal Tender, Colo.	*07½	*07½	06	06½	2,200
Morning Glim, Colo.	50	50	50	50b	4,200
Potosi, Colo.	12½b	12	11	15b	200
Rialto, Colo.	*12	36	11	36	11,700
Total for the week					266,300

*Buyer 30 days †Buyer 60 days. ‡Seller 60 days.
§Seller 30 days. a Asked. b Bid.

Kansas City. June 12.

Company.	Opening.	H.	L.	Closing.	Sales.
Argonaut	15†	15	15	15	100
Bates-Hunter	39½	41½*	39	39½	9,900
Big Six	8†	9	9	9	600
Brownlow	30†	..	..	..	.....
Cash Gold	28	28¼	28	28¼	8,100
Clay County	15†	35‡	..	..	.....
Diamond B	6	7*	6	7	2,000
Hard Money	5¼	5¼	4½	5	12,700
Iron Clad	21	21	21	22½‡	500
King Jack	5†	75‡	..	..	.....
Little Nugget	78½	78½	76†	77‡	500
Little Rule	49†	51*	49†	51*	100
May Mazeppa	69½	70	69½	69½	9,400
Minnequa Zinc M. Co.	25½	27*	25½	25½	8,200
Monte Cristo	3½	7*	3	6	3,100
Morning Glim	50	52*	49½	50	5,500
Pay Rock	7†	9‡	..	9‡	.....
Pelican	27½	30*	27½	28	4,000
Potosi	9	10	9	10	900
Sylph	..	..	..	..	.....
Total					65,600
Pit sales					.....

† Bid. ‡ Asked. * Buyer 30. § Seller 30.

Minneapolis. June 17.

Company.	Bid.	Asked.
Algoma	....	1.00
Amazon Iron Mg. Co.	....	$3.50
American Ruby Mg. Co	.18	25
Argenta S. Mg. Co.	....	75
Badger Silver Mg. Co.	4.85	....
Bessemer Consol. I. M. Co.	....	2.00
Big Ox Mg. & Rec. Co.	1.65	2.00
Black Hills Tin M. Co.	1.25	1.50
Deer Lodge Mg. & Sm. Co.	.11	.20
Derwood Con. Mg. & M. Co.	....	....
Dot Iron Mg. Co.	....	1.50
Glengary S. Mg. Co., Mont.	....	....
Gogebic Iron Co.	2.00	3.50
Iron Duke Mg. Co.	....	....
Keystone Mg. Co.	.20	1.00
North Pabst I. Mg. Co.	.12½	.16
N. W. Coal Mg. Co.	2.70	3.25
Phœnix Iron Works	32.50	36.00
Rochester M. & M. Co.	.12½	.25
Silver Arrow	.09½	.10
Silver Crown Mg. Co.	....	.30
Silver King Mg. Co.	....	1.00
Thunder Bay G. & S. M. Co.	....	.9[illegible]
United Iron & Land Syndicate	....	3.00
White Spar Mica Mg. Co.	....	*1.50

* Actual sales.

Salt Lake City. June 13.

COMPANY.	Opening.	H.	L.	Closing.	Sales.
Alice, Mont.	2.10b	2.30 b	2.10 b	2.30 b	300
Anchor, Utah.	4.25b	5.00 a	4.25 b	4 50	100
Alliance, Utah.	2.60b	3.25 a	2.60 b	2.80	5,800
Apex, Utah.	.21b	.40 a	.21 b	.22	500
Barnes, Utah	.08b	.10 a	.08 b	.10	.....
Camas, No. 1, Id.	1.00a	1.00 a	.82½b	.82½a	400
Crescent, Utah	.32b	.40 a	.32 b	.35	100
Cent.-Eureka. Ut.	21.00b	40.00 a	21.00 b	21.50	.....
Daly, Utah	22.00b	23.00 a	22.00 b	22.50 a	400
Glencoe, Utah	1.50b	2.00 a	1.50 b	1 60	.....
Horn Silver, Utah	†3.50b	3.50 b	3.50 b	3.50 b	.....
King of West, Id.	.....	.....	.....	.....	.....
Mammoth, Utah.	3.90b	4.25 a	3.90 b	4.05 b	.....
Malad Con., Id.	.25b	.27½a	.25 b	.23 a	.....
Ontario, Utah	44.50b	45.50 b	44.50 b	45.50 a	.....
P. C. M. Co., Utah	.....	....	.....	.....	.....
Rochester, Utah.	.....	.....	.....	.....	.....
S. L. L. & P. Co., Utah.	14.00b	14.00 b	14.00 b	14 00 b	.....
Utah L. & C. Co., Utah.	7.00b	7.00 b	7.00 b	7.00 b	.....
Woodside, Utah.	.....	.....	.....	.....	.....
Total sales	.....	.....	.....	.....	7,500

* Buyer 30 days. † Seller 30 days. a Asked. b Bid.

Lake Superior Iron and Gold Stocks.

(Special Report by David M. Ford, Houghton, Mich.)

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co.	$25.00	$55.00	$65.00
Aurora Iron Co.	25 00	7.50	8.00
Champion Iron Co.	25 00	90.00	95.00
Chandler Iron Co.	25.00	37.00	38.00
Chapin Iron Mining Co.	25.00	30.00	33.00
Chicago & Minn. Ore Co.	100.00	110.00	115 00
Cleveland Iron Co.	25.00	18.00	18.50
Germania	25.00	11.50	12.00
Jackson Iron Co.	25 00	110.00	....
Lake Superior Iron Co.	25 00	67.00	68.50
Milwaukee Iron Co.	25.00	5.50	6.50
Minnesota Iron Co.	100.00	83.50	85.00
Montreal Iron Co.	25.00	9.00	10.50
Norrie (Metropolitan)	25.00	70.00	75.00
Odanah Iron Co	25.00	20.00	22.00
Pittsburg Lake Angeline Co.	25.00	170.00	175.00
Republic Iron Co.	25.00	43.00	43.50

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co.	....	....	....
Grayling Gold & Silver Co.	$25.00	....	....
Michigan Gold Co.	25.00	$1.25	1.50
Peninsula Gold & Silver Co.	25.00	....	....
Ropes Gold & Silver Co.	25.00	2.25	2.50

* Actual sales were made at these prices.

PIPE LINE CERTIFICATES.

[Special Report by Messrs. Watson & Gibson.]

There has been little or nothing to record in the way of speculative activity in the oil market during the past week. The field news has been exceedingly meagre and without any importance. There is a possibility that some large wells may be reported within the next two or three weeks. Some good wells have been found and the production has been fairly well maintained. There has been comparatively little done in the export market, although the actual outward is good. The feature of the week has been the additional evidence of the Standard's intention to acquire producing territory which was furnished on Tuesday morning last by a dispatch from the West to the effect that the Standard Company had just acquired the property of Mr. Thomas Phillips, the president of the Producers' Association of Pennsylvania, one of the largest producing individual operators in the West. It is said that he received $1,500,000 for his entire interest. This transfer of territory had little or no immediate effect on prices.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
June 14.	89	89⅝	88⅝	89⅛	49,000
16.	90	90	89½	89½	46,000
17.	89¼	90	89¼	89⅜	78,000
18.	90¼	90⅝	90⅛	90¼	35,000
19.	89¼	89¾	89¼	89¾	58,000
20.	89¾	90	88¾	89	170,000
Total sales in barrels.					436,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
June 14.	90¼	90½	90	90½	10,000
16.	91	91	90½	90½	27,000
17.	90¼	91	90⅛	91¼	35,000
18.	89¼	89⅝	89	89	22,000
19.	90¾	91⅝	90⅜	91¼	42, 00
20.	91⅜	91⅜	89½	89¾	124,000
Total sales in barrels.					260,000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 20.

Statistics.

Mr. John H. Jones, chief of the Bureau of Anthracite Coal Statistics, furnishes us the following statement of shipments of anthracite coal (approximated) for the week ending June 14th, 1890, compared with the same period last year:

Regions.	June 14, 1890.	June 15, 1889.	Difference.
Wyoming Region Tons	426,700	399,011	Inc. 27,689
Lehigh Region ... "	137,418	131,256	Inc. 6,162
Schuylkill Region. "	259,297	204,286	Inc. 55,011
Total	823,415	734,553	Inc. 88,862
Total for year to date.	13,493,261	13,590,456	Dec. 97,195

STATEMENT OF ANTHRACITE COAL PRODUCTION for month of May, 1890, compared with the same period last year. Compiled from returns furnished by the mine operators.

	May, 1890.	May, 1889.	Difference.
Wyoming Region. Tons	1,654,822	1,574,689	Inc. 80,132
Lehigh Region "	577,620	547,287	Inc. 30,333
Schuylkill Region "	864,107	894,554	Dec. 30,446
Total	3,096,551	3,016,531	Inc. 80,019
	For year. 1890.	For Year 1889.	Difference.
Wyoming Region. Tons	6,047,623	6,357,812	Dec. 310,789
Lehigh Region. "	2,359,416	2,289,628	Inc. 69,787
Schuylkill Region. "	3,513,950	3,466,544	Inc. 47,406
Total	11,920,390	12,113,985	Dec. 193,594

The stock of coal on hand at tide-water shipping points, May 31st, 1890, was 719,939 tons; on April 30th, 1890, 827,424 tons; decrease, 107,485 tons.

PRODUCTION OF BITUMINOUS COAL for week ending June 14th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

Tons of 2.240 lbs.	1890. Week.	1890. Year.	1889. Year.
Phila. & Erie R.R.	2,665	57,245	31,555
Cumberland, Md.	68,021	1,747,105	1,319,792
Barclay, Pa.	‡2,975	64,955	51,003
Broad Top, Pa	8 112	340,688	170,370
Clearfield, Pa.	54,142	1,793,943	1,299,357
Allegheny, Pa.	21,386	616,877	388,313
Beach Creek, Pa.	34,521	894,706	591,467
Pocahontas Flat Top.	43 261	903,496	675,588
Kanawha, W. Va.	139 243	956,079	687,901
Total	274,326	7,256,182	5,218,346

WESTERN SHIPMENTS

Pittsburg, Pa	13,833	411,527	263,186
Westmoreland, Pa.	10,892	695,098	624,002
Monongahela, Pa.	15,671	171,044	119,602
Total	40,396	1,277,669	1,006,790
Grand total.	314,722	8,533,851	6,225,136

‡ Estimated.

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending June 14th, and year from January 1st, in tons of 2,000 lbs.: Week, 98,665 tons; year, 2,489,114 tons; to corresponding date in 1889, 2,012,360.

Anthracite.

The culmination of inactivity is about reached. Things could scarcely be more dull in the anthracite market than at present. Bull reports are cheerful and represent the market as in good shape with sanguine assertions of an early rise; bears, on the other hand, complain of accumulating stocks, cutting in prices. Bulls and bears, however, are only amusing themselves; when it comes down to actual transactions they will be found quite ready to give prices as low down as is consistent with the agreement. Many operators have murmured loudly during the week against what they term cutting in the scale prices. There has been, in fact, what at first glance might appear like cutting, but is not. In the first place one or two operators have, as usual, been filling "old orders" at April prices, in juxtaposition with new orders at June prices, against which no one can complain of the former contracts made in April. And in the second place, one of the large companies which has been making yearly contracts with certain railroad companies, recently found itself underbid by an operator on a 10,000 ton deal. The contract will, it is expected, prove a sorry one for the under-pricing operator by the time he has completed it, as the company which supplied the railroad on an old business footing had figures down as low as could be to live within the scale; and the company had the advantage over the operator in saving one profit.

The sales agents will meet on the 24th inst. to adjust the output for the month and decide upon the prices for July. It is generally understood that an increase will be decided upon. If not, it is stated by representatives of the larger companies that the output must be increased and expense so saved to equalize the absence of expected profit.

June prices have been paid during the past few days, but not largely, except for immediate consumption. No change is expected in the anthracite market until well on toward August, and operators are not backward in informing intending or prospective buyers that a rise is approaching, and that there is no time like the present to get in stocks of hard coal. Several of the large retailers have been moving in the market this week, which has created the impression that the retail consumers' demand is commencing, and in part placates the pessimists who complain that the output is going on at a rate which will end in 500,000 or 600,000 tons more than the agreement for the month.

In prices the only shifting quantities are pea and buckwheat. Buckwheat is regulated entirely by circumstances of demand and supply; from $1.50 for Lehigh to $1.75 for free burning will buy plenty one day and little the next. These are the two extremes in prices. Pea is still weak and quoted all the way from $2.25 to $2.50, with $2.40 as a more general price for the free burning. Stove, $3.75; chestnut and egg, $3.50; broken, $3.35.

Bituminous.

Overstocking is beginning to tell in the bituminous coal market. Even a shade in prices does not tempt buyers. This may be accounted for to some extent by the unexpected results flowing from the new move of the Pennsylvania Railroad Company to clear its cars and yards of coal. The larger bituminous owners and operators have all they can do to keep up to the demand and really keep any large amount of coal standing in cars in the yard. The smaller dealers buy prospectively on a rising market, trusting to find buyers while the coal is *in transitu*. If expectations are not met, under the new rule enforced by the railroad company, the penalties for keeping coal in the yard will amount to more than the difference between ruling prices and a cut of 20 cents to 25 cents. During the past week several operators in soft coal have made cuts of twenty and twenty-five cents to get rid of their stock in the yards. However, those dealers who have cut to save demurrage will in all likelihood take the operation as a dose of medicine, one good stiff application of which may be expected to relieve the malady.

This has caused a little, but entirely insignificant, uneasiness in the market. The overstocking will be followed in a short time by some shutting down for a few weeks.

Freights are better, while the demand for light draught boats for ice continues; there is a drop in freight with large vessels and more of them available. As a rule 5 cents to 10 cents lower than last week is now paid.

Prices—Baltimore, $2.40 @ $2.50 f.o.b.; Philadelphia, $2.50 @ $2.60; in New York harbor, $3.25; alongside, $3.50.

Boston. June 19.

(From our Special Correspondent.)

The anthracite coal market is almost lifeless. Jobbers report no business worth mention. No coal, speaking in general terms, has been sold at the advanced prices. The feature of the week is the heavy arrivals. The harbor has contained a large fleet. Over 20,000 tons are said to be at Mystic wharf and demurrage days are upon us. The railroad is unable to handle so much coal, and unless it shares the demurrage with the coal dealers, as has sometimes been the case, the demurrage charges will be heavy, and more than extinguish the advantage gained by the buyer in placing his order before the last advance in coal. Most of the anthracite coal at hand was bought about six weeks ago, and the rush is owing to the anxiety of dealers to get their coal delivered to them before July 1st. It is feared that old orders will be cancelled after that date.

The companies are adhering quite closely to the prices of the last advance, and that is the reason there is no business. Individual operators are so fully sold up that they have but little coal to offer and are not cutting prices severely.

The bituminous market is unchanged. There is no new business of any note. Plenty of coal can be had at $2.25@$2.35 f.o.b., with $2.40 as an outside figure.

The freight situation is a little easier. Large vessels can be had at New York for 70 cents, and 75 cents is charged for small vessels. The Philadelphia rate is $1.05@$1.15, and the Baltimore rate $1.30.

The retail movement is light. Dealers are making cut rates where competition forces them, but circular rates of the combination are still fairly well adhered to. As soon as business becomes active the fact that the combination has practically lost its power will appear straightway.

Buffalo. June 19.

(From our Special Correspondent.)

The anthracite coal market quiet, without changes in quotations. The only topics discussed are the output and whether prices will be higher. The movement by lake of hard coal continues light as compared with the years 1888 and 1889.

Bituminous coal in moderate request at nominally unvaried figures. Supply adequate to the requirements of business, without accumulations for future use.

The burning of soft coal in our city, without smoke consumers being used, has become such a nuisance that every effort will be made to have a remedy provided, no matter "whose ox is gored."

Referring to a matter mentioned in last letter the following newspaper paragraph gives the result: "To the Lowest Bidder. The Superintendent of Education submitted bids for supplying the Educational Department with coal. Thomas Loomis & Co. were the lowest, $3.79 per ton for grate, and $3.97 per net ton for egg, stove, and nut. Ald. Bradley moved to refer to the Committee on Schools. Ald. Drake moved as an amendment to award the contract to Loomis & Co. Ald. Bradley

said the coal to be supplied by Loomis & Co. was old stuff and almost worthless. 'We have an inspector,' said Ald. Summers, 'this man (Loomis) has made a flying bid, so let's catch him on the fly.' Ald. Bradley's motion was lost by 22 to 1, and the contract was given to Loomis & Co."

Bids for supplying the Government buildings with hard coal have been opened; four firms bid at the uniform price of $5.04 per ton for 300 tons of grate size.

The Toronto (Canada) Water-Works have advertised for 12,000 tons of Scranton, Pittston, Lehigh, Wilkesbarre or Lackawanna large egg coal, delivered at their docks or station at Toronto. Bids to be sent in by 30th June, 1890.

There is some excitement existing this morning relative to a statement from Washington concerning the occupancy of the north pier of Buffalo Harbor by the Delaware, Lackawanna & Western Company coal docks, chutes, etc., and the obstruction to navigation alleged to be caused by two vessels lying abreast at said pier. The story is too long to tell in your columns, but shall be referred to again next week more fully.

Lake freights on coal are firm and more active to Chicago and Milwaukee.

The shipments by lake of coal from June 12th to 18th, both days inclusive, aggregated 54,390 net tons; namely, 16,020 to Chicago, 16,310 to Milwaukee, 3,100 to Duluth, 610 to Toledo, 300 to Kenosha, 1,150 to Michigan City, 2,500 to Detroit, 8,400 to Superior, 2,150 to Marquette, 1,000 to Gladstone, 1,300 to Washburn, 400 to Saginaw, 500 to Green Bay, and 150 to Bay City; total thus far this season, 460,770 net tons. The rates of freight were: 60c. to Chicago; 50c. to Green Bay, Milwaukee and Gladstone; 40c. to Alpena, Washburn, Duluth, Saginaw, Algonac, Superior and Marquette; 30c. to Toledo and Detroit; 60c. to Kenosha and Michigan City, and 25c. to Bay City. Canal receipts of coal for second week in June, 357 net tons; shipments, 263 net tons.

The canal freights hence were 60c. per gross ton on coal to Syracuse, free unloading.

Pittsburg. June 19.

(From our Special Correspondent.)

Coal.—We have no change to note as relates to prices or demands. The unexpected rise in the Ohio enabled coal men to send out about 1,450,000 bushels. The lower markets have an abundant supply on hand. The big tow boats engaged in towing from Louisville to New Orleans have mostly returned; the others will arrive in the next ten days.

Nominal rates in pools:

	Per 100 bushels.		Per 100 bushels.
1st pool	$4.75	3d pool	$3.90
2d pool	4.50	4th pool	3.25

Railroad coal, $5.00@$5.50.

Connellsville Coke.—The firmness and activity noted in our last has been fully maintained; the coke men are well pleased with the situation, and well they may, as prices are steady and business very active. The outlook was never better; five days' operations seem to be the rule, not the exception. The list of idle ovens now reaches about 2,650, while the active number is 12,250. The car supply continues ample—last week reached 7,005 cars; increase, 710 cars. The Western demand for coke was active; week's shipment amounted to 127,000 tons. Prices firm, unchanged; f. o. b. cars at ovens, firm, $215; foundry, $245; crushed, $265; freights to all parts unchanged.

FREIGHTS.

From Philadelphia to: Newburyport, *1; Lynn, *1.10; New Bedford, *1.15; New York, †90; Providence, *1; Portland, *1.10; Washington, ‡85.

From New York to: Albany †40; Bangor, *75; Bath, *75; Beverly, *75; Boston, *.75; Bristol, §75; Bridgeport, §60; Brooklyn, †20; Cambridge, * 75; Cambridgeport, *75; Charlestown, *75; Chelsea, *75; Com. Pt., *80; East Boston, *75; East Cambridge, *75; East Greenwich, §75; Fall River, §75; Gardner, *.90; Gloucester, *80; Lynn, *80; Marblehead, *.75; Medford, *1; New Bedford, §75; Newburyport, *90; New Haven, §60; New London, §75; Newport, §75; New York, †20; Norwich, *75; Norwalk, §60; Portland, *.75; Portsmouth, N. H., *.85; Providence, §75; Quincy Pt., *80; Rockland, *75; Rockport, †75; Saco, *90; Salem, *.75; Wareham, *.90.

From Baltimore to: Bath, 1.30; Boston, Mass., 1.30; Charleston, .70; Fall River, 1.20; Galveston, 3.25; New Bedford, 1.20; New Haven, 1.20; New London, 1.20; New York, N. Y., 1.10; Portland, 1.30; Portsmouth, N. H., 1.30; Providence, 1.20; Quincy Pt., 1.40; Richmond, 70; Salem, Mass., 1.30; Savannah, .75@.80; Somerset 1.25; Williamsburg, N. Y., 1.15.

*And discharging. †Alongside. ‡And towage. §Flat.

METAL MARKET.

NEW YORK, Friday Evening, June 20.

Prices of silver per ounce troy.

June	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	June	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
14	4.87	47¾	1.04¼	18	4.87	48⅛	†
16	4.87	48⅛	*	19	4.87	48⅛	‡
17	4.87	48⅛	1.04¾	20	4.87	47⅞	1.04¼

*1.04¼ to 1.05. †1.05 to 1.04½. ‡1.04¼ to 1.04¾.

The uncertain state of Washington legislation is reflected in the erratic course of the silver market both here and in London. The chances, however, are still in favor of passing a liberal silver bill

Silver Bullion Certificates.

NEW YORK STOCK EXCHANGE.

	Price. H.	Price. L.	Sales.
June 14	104⅛	104¼	36,000
June 16	105⅞	104⅝	607,000
June 17	105¼	105	105,000
June 18	106	104½	586,000
June 19	105½	104½	415,000
June 20	105¼	104½	210,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

June 16	105⅞	105¾	20,000
June 18	105⅞		10,000
June 19	104⅛		25,000
Total sales			2,014,000

Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting on Thursday made no change in its rate for discount, and it remained at 3 per cent. During the week the bank lost £301,000 bullion, and the proportion of its reserve to its liabilities was reduced from 41·80 to 39·81 per cent., against an advance from 42·63 to 43·53 per cent. in the same week last year, when its rate for discount was 2½ per cent. The bank on the 19th inst. lost £60,000 bullion on balance. The weekly statement of the Bank of France shows gains of 4,550,000 francs gold and 2,700,000 francs silver.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .78	$ 81
Mexican dollars	.80	.81½
Peruvian soles and Chilian pesos	.73½	.75½
English silver	4.86	4.90
Five francs	.94	.95
Victoria sovereigns	4.87	4.90
Twenty francs	3.86	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	104½	105½

Copper.—Values continue to advance and Lake copper for prompt and early delivery is evidently becoming rather scarce. Early in the week a sale of Lake cakes and wire bars was reported at 16½c. for fall delivery, which naturally had a strengthening influence, as indicating the belief that present prices would at least be sustained for some time to come, and to give an additional impetus to the upward tendency, reports were received by telegram yesterday (19th) that serious strikes had broken out at the Tamarack mines, with the probability that these labor disputes would extend to the mines of the Calumet & Hecla Company, the Osceola Company, and possibly some others. Exact details concerning these disputes with the workmen are not yet to hand, but any interruption of operations at the present time would be exceedingly inconvenient. In view of this state of affairs, the producing companies have almost entirely withdrawn from the market, and virtually nothing in the way of Lake Copper can now be bought from first hands. The bankers are also now completely sold out of their holdings of both Lake and Arizona copper, and the latter description is now in much better demand than for some time past. We have to quote to-day as follows: Lake, 16½c.; Arizona, 15@15¼c.; Casting brands, 14½@14⅝.

In London the market for Chili bars and G. M. B. copper opened firm on Monday morning, at £59 5s.@£59 7s. 6d. spot and £59 17s. 6d.@£60 futures, on which day it was announced that the statistics of visible supplies showed the enormous decrease of 6,000 tons for the first half of June. In view of the fact that this great decrease immediately followed the month of May, in which were made the largest total deliveries in any single month in the whole history of the trade (17,030 tons) the strength of the market was what might naturally be expected, but some operators having evidently thought it afforded a good opportunity to realize prices subsequently eased off somewhat, and the latest cabled quotations to-day are £58 2s. 6d.@£58 5s., Spot, and £59@£59 2s. 6d., three months. This slight reaction will probably prove to be of only temporary duration.

The exports of copper during the past week were as follows:

To Liverpool.	Copper matte.	Lbs.	
S. S. Italy	2,132 bags.	212,791	$20,000
" Chicago	223 bbls.	224,778	10,000
To Havre.	Copper.	Lbs.	
S. S. La Britagne	408 bars.	22,500	$13,100
" Werkendam	18 casks.	22,500	3,280
" P. Caland	34 casks.	42,500	5,800

Tin.—The market has been rather unsettled during the whole of the week. It opened stronger on Monday, and considerable further quantities (about 150 tons) of June tin exchanged hands at 21·75, but later on the market weakened, and June tin sold at 21·50 and July at 21·20. Ample supplies are now on the way to this side, but in the meantime spot and June deliveries continue rather scarce.

The market movements in tin will without doubt be very greatly influenced by what is ultimated decided in regard to the silver question, and if silver rises or falls a corresponding movement in tin is certain to follow in London. Closing prices are: Spot and June, 21⅝@21¾; July, 21⅜; August, 21·30.

The London market opened steady on Monday morning, but gradually eased off a little, and the closing quotations cabled over to-day are £95@£95 2s. 6d. spot, and £95 12s. 6d.@£95 15s. futures, or a decline of about 17s. 6d. for the week. The shipments advised from the East to the United States for the first half of June amounted to a total of 525 tons.

Lead.—Rather large transactions have taken place during the week at gradually hardening prices. Early in the week $4.40 was accepted for heavy quantities, but later on prices stiffened, and the last quotations recorded are $4.50, at which figures, however, there are no more sellers. The London quotations are £13 5s. for Spanish and £13 15s. for English lead.

The Chicago Lead Market.—Messrs. Everett & Post telegraph us as follows: "The metal has further advanced during the week, and is now scarce at 4·40c. Sales foot up over 600 tons, mostly July delivery. Consumers have shown some desire to anticipate their requirements, but futures are not available at present quotations."

The St. Louis Lead Market.—Messrs. John Wahl & Co. telegraph us as follows: "The lead market is very steady, and the tone given it by buyers is very firm. Sales for the week aggregate 400 tons of refined lead at 4·25c. for June and July delivery. The New York market being higher, and with a decline in through freights to that city which came out lately, we would not be surprised to see a still greater rise in values. The market closes at 4·30 asked."

Spelter.—The market is quiet but very strong. From first hands nothing can be bought for June or July shipment, and for later months very high prices are asked. Demand is good and consumption evidently increasing. We quote about $5.55 @$5.65.

Antimony.—Hardly any business has been done owing to the scarcity of spot supplies. Cookson's is quoted 23½@¾ and Hallett's, 20½@¾.

The time has now arrived when the brand "L. X." will be regularly quoted, along with the other brands. This brand has been largely dealt in on this market for about twelve months past. It is smelted by the Lixa Mining Company, and the quality is said to be equal to any other imported brand. The present quotation for "L X" antimony is 22c.

Quicksilver.—This metal continues in good demand, and prices show an advancing tendency. London quotations remain as last week, £10 10s., but New York prices are higher, $56 being quoted.

Nickel.—There does not appear to be much doing in nickel. Nominal quotations are 65@70 cents.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 20.

Business for the week in the iron and steel market has been rather under than over the average in volume, yet the tone is firm and greater activity is looked for. The only business now done is for current consumption; while there is no doubt that moderate orders would be gladly taken at last week's quotations, no disposition is shown to reduce the rates. The trade is cheerful and confident, and the tone of the market healthy.

The summer dullness is a very good test of the condition of things. Without any speculation going on and with a comparatively moderate output, and the demand reduced to the supply for actual current consumption, the trades are very much encouraged by the entire absence of any apparent desire to undercut to secure business.

During the week there has been a number of inquiries on a large scale, but without any known resulting transactions. The inquiries are suspected to have been looking for a declining market and to have been scared off by the prevailing stiffness. The rumor that Southern iron is getting short, that the output is to be restricted, and that, therefore, an early rise is to be expected, has been floating around the trade for the last few days.

The talk of an expected strike among the furnace men and laborers in Kentucky has had no effect on the market here, as that region's output is less than 100,000 tons a year.

The only noticeable activity in the market during the week was in old rails, merchant steel and structural iron.

Pig Iron.—The market is very quiet but steady. Stocks are always so low that the average supply on hand would not last three weeks. Last week's price remain unchanged: Standard Northern iron, No. 1 x foundry, $18; No. 2, $17; Southern, No. 1, $16.75@$17.50; No. 2, $16@$16.50.

Scotch Pig.—There has been no inquiry and very little doing. About 250 tons, on order, ar rived during the week, and that is about the total volume of business. Nominal quotations are: Eglinton, $19; Dalmellington, $22; Summerlee, $23.50; Coltness, $24@$24.50.

Spiegeleisen and Ferro-manganese. — This market is torpid: no demand, no orders, no arrivals, and last week's nominal prices have been shaded slightly, like setting a sail to catch a breeze. But the air didn't stir. None is offering from abroad, which makes it unnecessary to decline it, as there is more than enough for present or immediately future requirements on hand. Low prices do not invite buyers.

In 80 per cent. ferro-manganese the price of $77 @$80 of last week has been modified to $75@$80, the former figure for early and the latter for later delivery. This unusual feature is attributed to the amount of stock on hand and the expected later demand. For 20 per cent. spiegeleisen, $31.50@$32 is asked, but the market affords at present no test of the conditions.

Muck Bars.—Nothing doing in this market at present. Nominal quotations are $28@$29.

Steel Rails.—Every one concerned professes to feel confident, all admit that nothing to speak of is doing at present, and prices remain firm. There has been some inquiry, a good deal of dickering, but no transactions. A drop of 50 cents to 75 cents might in one quarter have induced a tairish trans-action for future consumption, but the concession was not made. In view of the expected rise in the latter part of the summer, holders maintain rates, and that is keeping the market up. There is little opportunity for doing business below $30.25@ $31.

Rail Fastenings.—Very little doing indeed, but the firmness of other sections of the market is reflected here. The main business going on is in spikes. Prices for the week: Spikes, 2·05c.; angle plates, 1·90c.; bolts and square nuts, 2·70c., and hex. nuts, 2·95c.; complete joint, 90c. for steel and 70c. for iron.

Structural Iron and Steel.—The manufacturers are all kept busy by the building boom, and quotations remain firm and unchanged. Several contracts are now in course of negotiation for immense quantities of iron telegraph and electric light poles for the larger railroad, lighting and telegraph systems, which, if anything, increases the firmness but does not at present increase rates. Quotations are: Universal plates, 2·20; bridge plates, 2·15@ 2·20; angles, 2·15@2·20; tees, 2·55; beams, 3·10.

Tubes and Pipe.—The market is firm with a fair business doing. No change will be made in quotations before the meeting of manufacturers next week, and the boom announced as beginning in Pittsburg finds no echo in this market. We report ruling discounts on car lots, 47½ per cent. on butt, black; 40 on galvanized; 60 on lap, black, and 47½ on lap, galvanized; 40 on 1¼-inch boilers; 50 for 2 to 4-inch, and 52½ on larger than 4-inch; casing, all sizes, 50 per cent.

Merchant Steel.—There was a considerable revival during the week, which was, however, merely a fluctuation in no way affecting prices, and they remain: Best English tool steel, 15c. net; American tool steel, 7½@10c.; special grades, 13@ 20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2¾c.; open-hearth spring, 2¾c.; tire steel, 2¾c.; toe calks, 2¾c.; flat file, 4¼c.; mill file, 5¼c.; taper file, 7¼c.; first quality sheet, 10c.; second quality sheet, 8c.

Old Rails.—Business is brisk, and demand is fully equal, if not a little ahead of the supply. The activity is not confined to any particular locality or section, but orders come from all parts of the country. Last week's slightly stiffened prices, $24.50@$25, are as favorable as buyers can obtain.

Scrap Iron.—Business is reported good, but nothing above the normal. Wrought scrap rates at from $21@$22.50 from yards, and firm at that. Cast, stove plates, $13@$14; machinery scrap, $15 @$16.

Louisville. June 17.

(Special report by HALL BROS. & CO.)

The market still continues to improve, both as to price and demand. Furnaces have booked well ahead for some months, and as the situation is improving they do not seem disposed to sell to any length ahead, believing that the market is still in their favor, and many believe that the market will go considerably higher. One thing greatly to be feared is a general strike through the furnace districts; in fact, we are reliably informed that some of the leading furnaces have been notified by their laborers of their intention to strike. Should this occur, it is the opinion of many that it will be a long-continued one, in which event there will be few furnaces which will be able to supply their present obligations; beside, it will greatly lessen the output and reduce stocks.

At this time there is scarcely three weeks' available iron, while on the other hand, the wage question is an important factor, which is by no means as yet settled. The greatest trouble at this time is feared among the furnace laborers. Both consumers and speculators have been buying as heavily and as far ahead as possible, though few have been able to find furnaces which are in position or willing to take orders, except at advanced figures and in a limited way, and it is the greatest difficulty to get some furnaces to make prices at all. No. 1 Foundry was sold as high as $13 cash at furnace We are advised that there is a syndicate now being formed to buy all the iron they can, with a view of cornering the market.

Business in all lines is improving. There has been a number of sales made during the week, each sale at advanced figures. Buyers were somewhat disappointed at not being able to buy at their figures and deliveries; many seem skeptical of the furnaces having a strike and being scarce of iron, and express their belief that the furnaces are piling up iron, and that such statements are intended as a boom, and that July and August will bring about a reaction and the market will go lower than before. Nothwithstanding this, buyers seem compelled or rather anxious to buy for delivery as far ahead as possible, and are willing to pay the advance as it comes and are skirmishing around to buy as quickly as possible, showing conclusively there is something in the wind that may prove a tornado. So it may be well for all to study the situation, but the outlook certainly points to an improvement, particularly in coke irons. Charcoal irons have not shown the improvement that coke irons have; in fact, there is a small demand for them as compared with coke irons. We revise our quotations as follows:

Hot Blast Foundry Irons.

Southern Coke	No. 1	15.25@ 15.50
" "	No. 2	14.50@ 15 00
" "	No. 3	14.00@ 14.25
Mahoning Valley, Lake ore mixture		17.75@ 18.75
Southern Charcoal	No. 1	17.00@ 17.50
" "	No. 2	16.50@ 17.00
Missouri "	No. 1	18.00@ 18.50
" "	No. 2	17.00@ 17.50

Forge Irons.

Neutral Coke	13.50@ 14.00
Cold Short	13.50@ 13.75
Mottled	12.50@ 13.00

Car Wheel and Malleable Irons.

Southern (standard brands)	22.00@ 23.00
" (other brands)	18.00@ 19.00
Lake Superior	22.50@ 23.00

Pittsburg. June 19.

(From our special correspondent.)

Raw Iron and Steel.—The iron and steel market is certainly in a healthy condition, notwithstanding the nearness to the first of July, when most of the mills close down for repairs and to take stock. The sales reported during the present month were large and far in excess of June for a number of years, proving our assertion in regard to the condition of the market. The demand for Bessemer was less active than for some weeks past; this was to be expected, taking into consideration the large amount disposed of; in fact, certain furnaces, reported to have sold large blocks for future delivery, are indifferent about selling any more just at this time. We heard of several offers for three and five thousand ton lots at $19 for July, August and September which were refused. Bessemer sales this week show a falling off in values 25@50 cents. Mill iron is held firmly at last week's prices, with an increased inquiry, indicating that consumers that do not close down for repairs will soon be in want of stock. All descriptions of steel, including blooms, slabs and billets, are held firmly at full rates.

Muck Bar.—Is firm at current rates. Developments for some time past have been of a very satisfactory character excepting Bessemer. The approach of the mid-summer holidays is calculated to prevent any active movement, at least for a short time; everything at this time points to a heavy business during the last half of the year, hence the feeling in the trade is one of confidence. The reported light stock of raw iron in first hands tends to increase the confidence of makers and holders. From all we can learn the stock of old ore is about used up, and as operations to be soon commenced on the new purchase will involve considerable more money in the cost of coke and labor, the prospect for cheap pig iron is not very "rosy."

At present prices there is so little margin for profit that makers will require some advance before increasing their output, and as the demand is close to the supply, it is not likely that a trifling addition to present prices may be sufficient to secure a supply in proportion to the demand. But this applies to the future, for, as stated, there is nothing in the immediate conditions to indicate anything beyond a steady market at current rates. While buyers maintain a very conservative position, and do not go beyond their immediate wants, still increased inquiry concerning the future indicates that buyers do not want to be caught napping by a rise in prices.

Coal and Coke Smelted Lake Ore.

5,000 Tons Bessemer Valley at furnace, June, July and August	19.00 cash.
3,000 Tons Bessemer Wheeling, July and August	$19.50 cash.
3,000 Tons Bessemer	19.50 cash.
2,000 Tons Grey Forge	15.75 cash.
2,000 Tons Mill at City furnace	15 75 cash.
2,000 Tons Grey Forge at City furnace	15.75 cash.
1,500 Tons Grey Forge at City furnace	16.00 cash.
1,500 Tons Bessemer	19.50 cash.
1,000 Tons Bessemer	19.25 cash.
1,000 Tons Bessemer	19.50 cash.
1,000 Tons Mill Iron at City furnace	16.00 cash.
500 Tons Grey Forge	15.75 cash.
500 Tons Grey Forge	15.80 cash.
1,500 Tons Off Bessemer	18.00 cash.
300 Tons No. 2 Foundry	16.75 cash.
350 Tons No. 1 Foundry	17.75 cash

Coke Native Ore.

1,000 Tons Grey Forge	15.50 cash.
300 Tons White Iron Southern	14.65 cash.
200 Tons Grey Forge	15.80 cash.
50 Tons Silvery	17.50 cash.

Muck Bar.

1,000 Tons Neutral	29.0c cash.
1,000 Tons Neutral, July and August	29.50 cash.
1,000 Tons Neutral, July and August	29.50 cash.
100 Tons Neutral, July	29.50 cash.

Steel Slabs and Billets.

2,000 Tons Billets	31.50 cash.
2,000 Tons Billets	30.50 cash.
1,050 Tons Billets and Slabs	31.60 cash.
500 Tons Billets	32.00 cash.

Skelp Iron.

500 Tons Sheared Iron	210	4 mo.
350 Tons Narrow Grooved	175	4 mo.
200 Tons Wide Grooved	185	4 mo.

Steel Wire Rods.

1,500 Tons American Fives	42.00 cash.
500 Tons American Fives	40.50 cash.

Steel Bloom Ends.

1,000 Tons Bloom Ends, July-Oct.	21.00 cash.
1,000 Tons Bloom Ends	21.50 cash.

Ferro-Manganese.

350 Tons 80 per cent., f.o.b., N.Y. July-Oct.	76.50 cash.
50 Tons 80 per cent., Pittsburgh	80.00 cash.

Spiegel.

500 Tons 20 per cent., Aug., f.o.b. New York	31.75 cash.
300 Tons 10-12 per cent., Aug., f.o.b. New York	24.00 cash.

Prices.

Coke or Bituminous Pig—		20% Spiegel at New York, August	$31.75@
Foundry No. 1	$17.50@18.00	Muck-Bar	29.00@29.75
Foundry No. 2	16.25@16.50	Steel Blooms	31.00@
Gray F. No. 3	15.50@16.00	Steel Slabs	31.00@31.60
" No. 4	15.00@15.25	Steel Cr'p Ends	21.00@21.50
White	14.50@15.00	Steel Bl. Ends	20.50@21.00
Mottled	14.50@15.00	Ferro-Man., 80%, f.o.b. New York	76.50
Silvery	18.75@19.75	Steel Billets	31.00@32.20
Bessemer	19.00@19.75	Old Iron Rails	26.0%@
Low Phos	27.00@27.50	Old Steel Rails	21.50@22.00
Charcoal Pig—		No. 1 W. Scrap	20.00@21.00
Foundry No. 1	23.50@24.50	No. 2 W. Scrap	18.00@
Foundry No. 2	22.00@22.75	Steel Rails	33.00@33.50
Cold-Blast	25.00@29.00	" light sec	33.00@37.00
Warm-Blast	24.00@25.00	Bar Iron, nom.	1.85@ 1.90
10 + 12% Spiegel f. o. b. N. Y., August	29.00	Iron Nails	1.90
		Steel Nails	1.90
		Wire Nails	2.30@ 2.35

Philadelphia. June 19.

(From our Special Correspondent.)

Pig Iron.—Quite a run has been made on special brands of foundry iron during the past few days, and the supply for the next 60 days is almost exhausted. A large amount of inferior iron has been worked off at prices 50c. below current rates, both for forge and foundry. There is no accumulation of stock at furnaces. The volume of business has been below what was expected. A number of large buyers have been in the market taking observations and making inquiries, but are still in doubt as to whether it is best to make heavy contracts for the requirements of the rest of the year or wait a little longer. No. 1 foundry is quoted at $18 to $18.50 for standard, and $19 for special brands; No. 2, $17; gray forge, $15.50 to $16; Bessemer, $20.50 to $21.

Foreign Material.—Spiegeleisen is quoted at $31 to $31.50; no important sales have been made this week. Ferro-manganese is quoted at $75 for 80 per cent.; only a few small sales are reported.

Muck Bars.—In muck bars several offers have been submitted for supplies to be delivered during the next 60 days, in view of the upward tendency in prices. A few sales have been closed at $28, although makers are asking 50c. more to-day.

Merchant Iron.—To-day's quotations are: $1.85 for refined, $1.75 for medium, and $1.70 for common. Offerings of Western irons have been made in Eastern markets for several weeks and small lots are still coming. The mills are rather short of work, and a great deal of anxiety is felt on the subject of midsummer and early fall business.

Sheet Iron.—Manufacturers report a moderate demand at firm prices. The accumulation of orders that has been going on for months past leaves them in first-class condition for a little lull in demand. The consumption is still heavy, and no doubts are entertained by manufacturers as to their ability to maintain card rates.

Billets and Slabs.—If the offers of some buyers had been accepted this week large sales would have been announced. The views of buyers and sellers, however, are very widely apart just at present. Quotations range from $32 to $34.

Skelp Iron.—No business of importance has been done during the past three or four days. Grooved skelp is quoted at 1·95; sheared, 1·90.

Wrought Iron Pipe.—The mills are very busy, with plenty of work ahead, and excellent prospects for the future. Prices are firmly held at outside limits.

Plate and Tank.—Strong prices are maintained for both iron and steel plate, and a good business is being done, although the majority of orders are small. Ship plates are quoted at quoted at 3·30 to 2·40; shell, 2·60; flange, 2·80—all for steel. Iron ship plates, 2·10; shell, 2·40.

Structural Iron.—The presentation of a good many specifications within the past few days has served to strengthen the views of manufacturers. Tees are in particularly active request; a few large orders have just been placed. Beams and channels are quoted at 3.10. A large amount of business is about being placed.

Steel Rails.—Large lots of steel rails have been quoted as low as $31 this week; small lots, $32. The condition of the steel rail trade is decidedly better, owing to the fact that several Western railroad companies have about arranged for the placing of very heavy orders. Light rails are particularly active at present.

Old Rails.—Old rails are quoted at $24.50 at seaboard; only small lots are to be had.

Scrap Iron.—No. 1 wrought scrap is salable at $22, but very little is offered. All other kinds are quiet.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, June 20.

Heavy Chemicals.—This market continues to show a dearth of any features of interest. Buyers appear to be doing a hand-to-mouth trading, and decline to give extensive orders. From our Liverpool advices we learn that the market there is pretty much in the same condition, caustic soda being about the only article in demand, and our report states that the market is practically swept for June. For 70-74 per cent. caustic soda quotations here are 2·55@2·57½c., and for 76-77 per cent. 2·55@2·57½c. Carbonated soda ash, 48 per cent., is quoted at 1·45c. and 58 per cent. 1·40@1·50c. Caustic soda ash is 1·45@1·55c. Sal soda 97½@1·05c., and bleaching powder is 1·30@1·35c. for Liverpool brands and 1·25c. for Newcastle.

Acids.—Nothing essentially new or of any particular importance has transpired during the week under review. Some manufacturers report that prices show a stiffening tendency, while others assert that all such such statements are incorrect. As a matter of fact, good prices are obtained only from small consumers who have not been quoted low prices by competing dealers. Business, so far as volume is concerned, remains as for the past few weeks, and, as we have already stated, prices on the whole show but little, if indeed, any improvement.

The management of the Knickerbocker Chemical Company emphatically denies that it will go out of existence with the end of this month. Whether it will continue unchanged in respect to its present membership it could not be ascertained.

Acid, per 100 pounds in New York and vicinity: Acetic, $1.75@$2.25; muriatic, 18-degree, 80c.@$1.25; muriatic, 20-degree, 90c.@$1.50; muriatic, 22-degree, 90c.@$1.75; nitric, 36-degree, $2.75@$3.50; nitric, 40-degrees, $3.25@$4.4.50; nitric, 42 degree, $3.75@$4.75; sulphuric, 60-degree, 70@80c., and sulphuric, 66-degree, 85c.@$1.

Fertilizing Chemicals.—Very little is doing in this market just now. Indeed, a different state of affairs could hardly be expected. Prices are nominally the same. We accordingly quote high grade dried blood $1.90@$1.95. For the low grade the price is $1.80@$1.85. Azotine, $1.90@$1.95. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $19@$20 per ton, and low grade 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $18@$18.50. Fish scrap, $20.50@$21 per ton. f.o.b. factory. Sulphate of ammonia at $3.00@$3.10 per cwt. The gas article is in demand for ice-making purposes. Both it aqua ammonia have advanced, and still show an upward tendency. Concentrated tankage, $1.80@$1.85. Refuse, bone black, guaranteed 70 per cent. phosphate, $18@$18.50 per ton. Dissolved bone-black is nominally 95c. per unit for available phosphoric acid, although on large lots prices might be somewhat reduced, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $5.75 per ton; kiln-dried, $6.50@$7 per ton, both f. o. b. vessels at the mines. Freights by sail from Charleston to New York, $2.25@$2.50 per ton. Charleston rock, ground $11.50@$12, ex vessel at New York.

Quotations are for 48 to 52 per cent. sulphate of potash, $1.12½ per 100 pounds for shipments from date; high grade manure salts, basis 90 per cent. sulphate of potash, $2.37½ per 100 pounds.

Kainit.—A large business is reported in this article. Sales in this market do not aggregate 500 tons, but it should be remembered, however, that New York is a small market. We are informed that after July 1st the price of Kainit will advance 25 cents. It is now quoted at $9.50 for invoice weight, and $9.75 for actual weight.

Muriate of Potash.—There were 300 tons arrived at this port, all of which went into consumption; quotations are $1.77½@$1.85.

Nitrate of Soda.—But little of any moment is doing in nitrate just now. Spot quotations are $1.70, and $1.72@$17.75 ex-store.

Brimstone.—Buyers again show disinclination to come into this market, and in consequence brimstone is quiet at $21.50 for seconds and $20.75 for thirds.

Mr. Paul C. Trenholm, of Charleston, S. C., sends us the following statistics, showing the shipments of phosphate rock from Charleston, S. C., May 1888, 1889 and 1890:

	1888.		1889.	
	Crude.	Ground.	Crude.	Ground.
Domestic	23,259	Nil.	12,647	Nil.
Foreign	Nil.	Nil.	Nil.	Nil.

	1890.	
	Crude.	Ground.
Domestic	13,878	651
Foreign	10,571	Nil.

Shipments of phosphate from Montreal, Cana da for the month ending on the 8th inst. amounted to 4,263 tons.

By *Telegraph.*—The Phosphate Miners' Exchange of Charleston, S. C., advanced price of rock today to $7 and $7.25, f.o.b. vessel and cars, respectively.

Liverpool. June 11.

(Special Report by Messrs. J. P. Brunner & Co.)

Since our last caustic soda shows a marked improvement, but other lines are about unchanged.

Soda Ash.—There is little business reported, although a fair number of inquiries for special brands. To-day quotations are: Caustic ash, 1⅛d. to 1¼d.; carb. ash, 1¼d. to 1⅜d., according to brands.

Soda crystals have been selling freely, and prices advanced, £3 2s. 6d. to £3 5s. being the nearest spot quotations.

Caustic Soda.—There has been quite an active demand for this article of late, and a considerable business done in 70 per cent., both for June and July delivery, at prices ranging from £7 17s. 6d. (which figure was accepted at the end of last week) up to £8 5s., which has been paid to-day. The marked is now practically swept for June; £8 10s. is generally asked for next month's delivery; 60 per cent. has been sold at £7 to £7 5s., while at the close £7 10s. is generally asked.

74 per cent. now held for £8 15s. to £9.

76 per cent., £9 15s. to £10.

Bleaching powder is still flat at £5 about nearest spot value.

Chlorate of potash in fair request at 4½d. to 4¾d. per lb., the higher price being asked for some special makes.

Bicarb. soda in small compass and held for £5 15s. per ton and upwards, for one cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia shows little change, and a moderate business passing at £11 3s. 9d. to £11 5s. per ton for good gray 24 per cent. f.o.b. Liverpool, while possibly the lower figure might be shaded by ⅛d. for a good order.

P. S.—Since writing above, some fair sales of 74 per cent. caustic soda are reported for July and August delivery at £8 15s., and no sellers now at under £9. There is no 74 per cent. now offering for June.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, June 20.

Lime.—There are rumors of internal dissension in the Knox County Lime Association. As our readers will remember, the association decided some time ago to stop all shipments of lime till the market was relieved of the then existing glut. One burner, however, disobeyed, and a cargo from him arrived at this port this week, thus violating the agreement. This provoked considerable excitement among the other members of the trust, each individual claiming that unless all members were restricted alike and proportionately to their capacity, disruption would follow. If the guilty member persists in disregarding the embargo and continues to ship his product hither there is no telling what the other members, in their anger, will do. At all events, it will be some weeks before the trouble is settled.

There are more inquiries, and it has been reported to us that in some cases there has been a shading of prices. We quote: Rockland common, $1 per barrel; Rockland finishing, $1.20; St. John, common and finishing, 90c.@95c.; Glens Falls, common and finishing, 85c.@$1.10.

Bricks.—The demand for bricks has improved, but there are still accumulations of 2,000,000 or 3,000,000. Arrivals are also less frequent, and the market may be said to show some improvement over last week. We give the following quotations: Haverstraws, $5@$6 per thousand; Up-rivers, $4@$5; Jerseys, $4@$5; Pales, $3@$3.25 per thousand.

IMPORTS AND EXPORTS OF METALS AT NEW YORK JUNE 7 TO JUNE 14 AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co.		197
Hendricks Bros.		50
La Marche's Sons, H.		5
Lewisohn Bros.		50
Meyer, G. A. & E.		9
Muller, Schall & Co.		93
Total		404
Corres. date, 1889..	139	318

Pig Lead.	Lbs.	Lbs.
Caswell, E. A.		111
Hendricks Bros.		50
Schultz & Co., A.		98
G. W. Sheldon		149
Total		408
Corres. date, 1889..		129

Tin.	Tons.	Tons.
Abbot, Jere, & Co.		50
Amer. Metal Co.		2,125
Bidwell & French.	55	640
Bruce & Cook		10
Carter, Hawley & Co.		10
Cohen, H.		20
Crooks & Co., R.		75
Davol & Son		15
Hendricks Bros.		26
Lehmaier, E., & Co.		67
Muller, Schall & Co.		520
Naylor & Co.		841
Nissen, Geo.		10
Phelps, Dodge & Co.		2,350
Thomson, A. A. & Co.		30
Thomson, D. & Co.		40
Townsend, & Co., J. R.		30
Trotter & Co, N.		75
Total	55	6,934
Corres. date, 1889..	250	4,857

Tin Plates.	Boxes.	Boxes.
Bruce & Cook	2,928	51,938
Byrne & Son		1,000
Central Stamp. Co.	228	40,356
Coddington & Co.	2,899	51,745
Cohn & Co	257	10,795
Con. Fruit Jar Co.		120
Corbiere F. & Co.		6,072
Cort & Co.	7,545	75,739
Crooks & Co.	2,790	22,218
De Milt & Co, H R.		868
Dickerson, V. D. & Co	3,000	165,222
Haberman, F.		66
Herring, Chas. E.		1,000
Iron Clad Mfg. Co.		379
Lalance & G. M. Co.		3,116
Lazard Bros.		1,048
Lehmaier, Schw'z & Co.		200
Merchant & Co.	756	11,253
Mersick & Co.	727	4,768
Morewood & Co.		35,220
Newell Bros.		416
Payne, S. H. & Co.	360	584
Pratt Mfg. Co.	790	50,713
Phelps, Dodge & Co	19,621	348,489
Shepard & Co.		1,823
Taylor, N. & G.	795	1,029
Thomson & Co., A. A.	10,007	51,722
Warren, J. M.	71	3,530
Wheeler & Co.	1,615	12,559
Whittemore & Co.	667	11,416
Wolff & Reesing.		2,077
Wright, Peter & Co.		227
Total	54,856	973,518
Corres. date, 1889..	86,093	1,152,719

Pig Iron.	Tons.	Tons.
Abbott & Co., Jere.		100
Baldwin & Co., A.		7
Crocker Bros.	100	600
Crooks & Co., R.	5	5
Dana & Co.		150
Geisenheimer & Co		76
Irvin. R. I. & Co		100
Naylor & Co.		150
Pierson & Co.		30
Stetsson & Co., G. W.		1,575
Williamson, J. & Co.		1,050
Total	105	3,843
Corres. date, 1889..	972	12,274

Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Baldwin Bros. & Co.		2
Dana & Co.		1,059
Downing, R. F. & Co.		5
Henderson Bros.	1	1
Martin & Co		80
Milne, A., & Co.		18
Pope, Jas. E., Jr.		61
Roebling's Sons, J. A.		1,241
Wolff, & Co., R. H.		60
Total	1	2,527
Corres. date, 1889...	700	47,191

Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.		489
Bacon & Co.	250	804
Crocker Bros.		77
Dickerson, Van Dusen & Co.		6
Downing & Co.		285
E. J. Jacobus.		5
Fuller, Dana & Fitz.		11
Holt, H. N.		60
Lilienberg, N.		385
Lundberg, G.		390
Milne & Co.		234
Muller, Schall & Co.		263
Naylor & Co.	25	25
Page, Newell & Co.		1,284
Wilson, J. G.		3
Total	275	4,321
Corres. date, 1889...	115	3,213

Scrap Iron.	Tons.	Tons.
Crossman & Co., W. H.	30	30
Muller, Schall & Co.		18
Samper & Co., S.		186
Stevens, Corvin & Co.		30
Ward, J. E. & Co.		392
Total	30	656
Corres. date, 1889...		1,033

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co.		5,290
American S. Co.		565
Bacon & Co.		73
Carey & Moen.		218
Cooper, Hewitt & Co.		371
Dana & Co.		373
Downing & Co.		75
Galpin, S. A.		1,066
Greely & Co. C. S.		35
Hazard Mfg. Co.		179
Jacobus, E. Y.		2
Lee, James & Co.	100	1,249
Lillienberg, N.		300
Lundberg, G.		126
Milne & Co.		355
Muller, Schall & Co.		557
Naylor & Co.	165	3,634
Page, Newell & Co.		1,078
Roebling's Sons, J. A.	130	1,776
Schulze, P. R.		1
Temple & Lockwood.		6
Wiebusch & Ho.		4
Wood & Niebuhr.		25
Wolf & Co., R. H.	31	2,707
Total	426	19,575
Corres. date, 1889...	1,540	25,244

Old Rails.	Tons.	Tons.
Bowring & Archibald		340
Frankfort, M.		3,282
Henderson Bros.		300
Hernsheim, E.		350
Mosle Bros.		123
Naylor & Co.		1,023
Sawyer, Wallace & Co.		610
Total		6,088
Corres. date, 1889...		8,364

Spiegeleisen.	Tons.	Tons.
Abbott, Jere & Co.		2,725
Blakely & McLellan		1,684
Crocker Bros.	615	12,352
Crooks & Co., R.		106
Dana & Co.	1,004	12,667
Foley, F.		50
Geisenheimer & Co.		228
Hernshime, L.	256	12,053
Holt, H. N.		200
Naylor & Co.		9,196
Perkins, C. L.		1,400
Sachs & Richmond.		2
Whittemore, H. & Co.		25
Total	1,875	52,688
Corres. date, 1889...	1,128	37,817

Iron Ore.	Tons.	Tons.
Baiz, Jacob		67
Bowring & Archibald.		1,172
Earnshaw, A.		3,193
Ennis, Andrew		438
Flores & Co., R. de		10,223
Johnson & Co., L.		2,700
Total		17,793
Corres. date, 1889..		7,508

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere.	363,247	1,571,407
Amer. Met. Co., L.		8.6,898
Barber & Co		13,750
Belmont, Aug. & Co.		957,315
Burgass & Co.		173,734
French, Edye & Co.		135,374
Heidelbech, Sicheimer & Co		672,608
Seamen, S. H.		66,950
Ward, J. E. & Co.		100,000
Wil'ms & T'hune.		112,004
Total	363,247	4,659,950
Corre. date, 1889..	57,277	2,822,847

Copper Matte	
American Metal Co	2,005,351
Lewisohn Bros.	1,257,412
Nichols, Geo. H.	267,202
Paulsen, Wm.	1,039,428
Wil'ms & T'hune.	2,848,706
Total	7,418,099
Corres. date 1889.	824,028 11,209,691

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied	Date and amount of last.		Dividends. Total paid.	Date and amount of last.	
1	Adams s. L.	Colo.	$1,500,000	150,000	$10	*	....	....	$555 000	Jan. 1887	15
2	Alice, s. C	Mont	10,000,000	400,000	25	*	....	....	850,000	July 1890	.06½
3	Alma&Nel Wood C..o	Idah	300,000	30,000	10	....	....	....	60,000	Jan. 1 89	.50
4	American & Nettie,C.	Colo.	.....	300,000	....	....	....	....	150,000	Nov. 1889	10
5	Amy & Silveramina,s.	Mon.	.....	341,419	....	....	....	....	247,530	Aug. 1887	12½
6	Atlantic, C	Mich	1,000,000	40,000	25	$280,000	Apl. 1875	$1.00	620,000	Feb. 1890	1.50
7	Argenta, s	Nev.	10,000,000	100,000	100	335,000	July 1889	.10	40,000	Feb. 1890	.20
8	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*	....	....	440,000	Jun 1890	.10
9	Aurora, I	Mich	2,000,000	100,000	20	*	....	....	155,000	Oct. 1887	1.87½
10	Badger, S	Cal.	250,000	50,000	5	....	....	....	37,500	Mar. 1890	.25
11	Bassick, G. S	Colo.	10,000,000	100,000	100	*	....	....	150,000	Jan. 1884	1.00
12	Belle Isle, S	Nev..	10,000,000	100,000	100	....	....	....	300,00.	Dec 1879	25
13	Belcher, G. S	Nev..	10,400,000	104,000	100	2,028,000	Apl. 1890	.50	15,397,000	Apl. 1876	1.00
14	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	120,000	Dec. 1889	25	240,000	Jan. 1887	10
15	Bodie Con., G. S	Cal .	10,000 000	100 000	100	575,000	Nov 1889	25	1,602,572	Apl. 1885	50
16	Boston & Mont., G	Mon.	2,500,000	250,000	10	*	....	....	520,000	Jun 1886	.15
17	Boston & Mont., C.S.	Mon.	2,500,000	100,000	25	*	....	....	1,300,000	May 1890	1.00
18	Breece, S	Colo	5,000,000	200,000	25	*	....	....	2,000	Feb. 1880	.01
19	Brooklyn Lead, L. S.	Utah	500,000	50,000	10	....	....	....	127,000	July 1887	.05
20	Bulwer, G	Cal.	10,000,000	100,000	10	130,000	Aug. 1889	.25	175 000	Jan. 1884	.10
21	Bunker Hill & Sull..	Idah.	3,000,000	300,000	10	*	....	....	150.000	Oct. 1883	.06⅔
22	Caledonia, G	Dak.	10,000,000	100,000	100	505,000	May 1885	.15	160.000	Jun, 1890	.08
23	Calliope, S	Colo.	1,000,000	....	....	....	....	....	90,000	Apl. 1890	.01
24	Calumet & Hecla, C	Mich	2,500,000	100,000	25	1,200,000	....	....	34,350,000	May 1890	5.00
25	Carbonate Hill s. L.	Colo.	1,500,000	200,000	10	*	....	....	80,000	Apl. 1884	.05
26	Carlisle, G	N. M	1,000,000	200,000	5	....	....	....	175,000	Dec. 1888	.12½
27	Castle Creek, G	Idah.	100.000	100,000	1	....	....	....	51,000	Oct.. 1883	.03
28	Cataipa, s. L	Colo.	3,000,000	300,000	10	*	....	....	270,000	May. 1884	.10
29	Central, C	Mich	500,000	20,000	25	100,000	Sept 1861	.06	1,950.000	Feb. 1890	1.00
30	Chrysolite, s. L	Colo	10,000,000	200,000	50	*	....	....	1,650,000	Dec 1884	.25
31	Colorado Central, s. L	Colo.	2,750,000	275,000	10	*	....	....	406,250	Apl. 1889	.50
32	Confidence, s. L	Nev..	.....	24,980	....	306,160	Mar. 1890	.75	199,880	Apl. 1889	1.00
33	Cons. Cal. & Va., G & S.	Nev.	21 600 000	216.000	100	108,000	Jan. 1885	.20	3,466.800	Apl. 1890	.25
34	Contention, s	Ariz.	12,500,000	250.000	50	....	....	....	2,587.500	Dec. 1884	.25
35	*Cop. Queen Cons, C.	Ariz.	1,400 000	140,000	10	....	....	....	210,000	Feb. 1889	.50
36	Crescent, s. L. G	Utah	15,000,000	600,000	25	....	....	....	228,000	Oct. 1888	.03
37	Crown Point, G. S	Nev..	10 000.000	100,000	100	2,850,000	Sept 1880	.50	11,500 000	Jan. 1875	2.00
38	Daly, s. L	Utah	3,000,000	150,000	20	....	....	....	1,837 500	Jun. 1890	.25
39	Deer Creek, s. G	Idah.	1 000,000	200,000	5	*	....	....	20,000	Jun. 1889	.05
40	Deadwood-Terra, G	Dak..	5,000,000	200,000	25	*	....	....	1,000,000	Nov. 1887	.10
41	Derbec B. Grav., G. S.	Cal..	10,000,000	100,000	100	90,000	Dec. 1881	.10	210.000	Oct 1889	.10
42	Dunkin, s. L	Colo.	5,000,000	200 000	25	*	....	....	390,000	Oct. 1889	.05
43	Dunstone, G. S. L	Mont	1,000,000	200,000	5	*	....	....	6,000	Nov. 1888	.03
44	Eclipse	Colo	100,000	100,000	1	....	....	....	30,000	Nov. 1887	.10
45	Elkhorn, G. S	Mont	1,000,000	100,000	10	50,000	July 1883	.50	850,000	July 1887	.05
46	Empire Lt., G	Mont	500,000	100,000	5	....	....	....	70,500	Oct. 1887	.37½
47	Eureka Con., G. S. L.	Nev..	5,000,000	50,000	100	550,000	Jun. 1889	.50	4,955.000	July 1888	.25
48	Evening Star, S. L	Colo.	500,000	50,000	10	*	....	....	1,450,000	Dec. 1889	.25
49	Excelsior, G	Cal..	10,000,000	100,000	100	560,000	Sept 1885	1.00	875,000	Oct.. 1886	.25
50	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov 1878	1.00	1,125.000	Dec. 1889	.30
51	Franklin, C	Mich	1,000,000	40,000	25	220,000	Jun. 1871	....	930,000	Jan. 1889	2.00
52	Freeland, G. S. C	Colo.	5,000,000	200,000	25	*	....	....	190,000	July 1886	.10
53	Garfield Lt., G. S	Nov.	500,000	100,000	5	....	....	....	95,000	Apl. 1888	.12½
54	Gould & Curry, G. S.	Nev..	10,800,000	108,000	100	4,465,500	Apl. 1890	.30	826,800	Oct. 1870	10.00
55	Grand Prize, S	Nev..	10,000,000	100,000	100	715,000	Nov. 1889	.30	525,000	Jan. 1890	.30
56	Granite, s. L	Idah.	500,000	500,000	1	*	....	....	28.4.0	Oct. 1889	.02
57	Granite Mountain, G.	Mont	10,000,000	400,000	25	....	....	....	8,400.000	Mar. 1890	.50
58	Green Mountain, G	Cal..	1,250,000	125,000	10	....	....	....	1,000,000	Nov. 1881	.07½
59	Hale & Norcross, G. S	Nev.	11,200,000	112.000	100	5,086,000	July 1887	.50	1,132.000	July 1888	.50
60	Hecla Con., s. G. L. C.	Mont	1,500,000	30,000	50	....	....	....	1,500,000	Apl. 1889	.50
61	Hel'a Mg & Red, G.S.L	Mont	3,315,000	663,000	5	*	....	....	197,979	July 1886	.06
62	Holmes, S	Nev.	10,000,000	100,000	100	325,000	Mar. 1890	.25	75,000	Apl. 1886	.25
63	Holyoke, G	Utah	500,000	200,000	2	37,500	Apl. 1889	.06	27.000	Feb. 1883	.10
64	Homestake, G	Dak.	12,500,000	125,000	100	300,000	July 1878	1.00	5,576,250	Jun. 1890	.10
65	Honorine, s. L	Utah	500,000	250,000	2	37,500	Apl. 1889	.06	125,000	Sept 1887	.05
66	Hope, S	Mont	1,000,000	100,000	10	*	....	....	233,252	Apl. 1888	.25
67	Horn-Silver, s. L	Utah	10.000.000	400.000	25	*	....	....	4,150,000	Jun. 1890	.12½
68	Hubert, G	Colo.	1,000,000	1 mil'n	1	*	....	....	247.000	Dec. 1889	.00½
69	Idaho, G	Cal..	310,000	3,100	100	....	....	....	5,235,900	Dec. 1889	5.00
70	Ideal, S	Utah	1,500,000	150,000	10	*	....	....	15.000	Oct. 1886	.05
71	Illinois, S	N. M.	100,000	100,000	1	....	....	....	45,000	Apl. 1889	.20
72	Independence, S	Nev..	10,000,000	100,000	100	340,000	Oct. 1886	.20	225,000	Sept 1879	.25
73	Iron Hill, S	Dak.	2,500,000	250,000	10	134,000	July 1889	.08	156,250	Nov 1887	.07½
74	Iron-Silver, S. L	Colo.	10,000,000	500,000	20	*	....	....	2,500.000	Apl. 1889	.20
75	Jackson, G. S	Nev.	5,000,000	50,000	100	237,500	Nov 1880	.20	55,000	Jun. 1889	.10
76	Jay Gould,	Mont	2,000,000	40,000	5	*	....	....	395,000	Apl. 1889	.04
77	Jecalitla, S	Mex.	2,500,000	250,000	10	*	....	....	1,200,000	Feb. 1889	.50
78	Jumbo, G	Colo.	2,000,000	200,000	10	*	....	....	35.000	Oct. 1887	.02½
79	Kearsarge, C	Mich	1,250,000	50,000	25	190,000	Oct. 1887	1.00	100,000	Jan 1890	2.00
80	Kentuck	Nev.	3,000,000	30,000	100	369,000	Dec. 1889	.30	1,350,000	Dec. 1886	.10
81	La Plata, s. L	Colo.	2,000,000	200,000	10	*	....	....	610,000	Sept 1882	.30
82	Leadville Cons., s. L.	Colo.	4,000,000	400,000	10	*	....	....	423,000	Apl. 1889	.05
83	Lexington, G	Mont	4,000,000	40,000	100	*	....	....	600,000	Jan. 1885	2.00
84	Little Chief, s. L	Colo.	10,000,00	200,000	50	*	....	....	810,000	Jan. 1890	.05
85	Little Pittsburg, s. L	Colo.	20,000,000	200,000	100	*	....	....	1,000,000	Mch. 1889	.50
86	Martin White, S	Nev..	10,000,000	100,000	100	100,000	Feb. 1890	.25	140.000	Dec. 1886	.25
87	Mary Murphy, G. S	Colo.	350,000	3,500	100	*	....	....	175,000	May 1888	5.00
88	Matchless, S	Colo.	500.000	500,000	1	*	....	....	15,000	Feb. 1890	.00½
89	Minnesota, C	Mich	1,000,000	40,000	25	420,000	Apl. 1886	1 00	1,820,000	Mar. 1876	....
90	Mono, G	Cal..	5,000,000	100,000	100	102,850	Nov. 1889	.25	12,50+	Mar. 1886	.25
91	Montana, Lt., G. S	Mont	3,300,000	660,000	5	*	....	....	2,465,129	Apl. 1890	.06
92	Morning Star, s. L	Colo.	1,000,000	100,000	10	*	....	....	850,000	Dec. 1889	.20
93	Moulton, s. G	Mont	2,000,000	400,000	5	*	....	....	380,000	Dec. 1887	.07½
94	Mount Pleasant, G	Cal.	150,000	150,000	1	*	....	....	150,000	Feb. 1887	.30
95	Mt. Diablo, S	Nev.	5,000,000	50,000	100	137,500	Jun. 1880	2.00	160,000	Oct 1889	.20
96	Napa, Q	Cal..	700,000	100,000	7	*	....	....	360,000	Apl. 1890	.10
97	Navajo, G. S	Nev..	10,000,000	100,000	100	485,000	Apl. 1888	.30	365,000	Apl. 1890	.10
98	New Guston, S	Colo.	500,000	100,000	5	*	....	....	287,500	Dec. 1889	.87½
99	N. Hoover Hill, G. S.	N. C.	800,000	120,000	2½	*	....	....	30,000	Dec. 1885	.06⅔
100	Northern Belle, S	Nev..	5,000,000	50,000	100	425,000	Jan. 1884	8.00	2,400,000	Apl. 1883	.50
101	North Belle Isle, S	Nev..	10,000,000	100,000	100	400,000	Sept 1889	.20	230,000	May 1888	.50
102	North Star, G	Cal..	1,000,000	100,000	10	*	....	....	250.000	Dec. 1889	.50
103	Ontario, s. L	Utah	15,000,000	150,000	100	*	....	....	11,075,000	Jun 1890	.50
104	Ophir, G. S	Nev..	10,000,000	100,000	100	4,159,440	May 1889	.50	1,985,000	July 1882	1.00
105	Original, S. C	Mont	1,500,000	60,000	25	*	....	....	135,000	July 1888	.05
106	Osceola, C	Mich	1,250,000	50,000	25	480,000	Apl. 1876	1.60	1,322,500	Jun. 1890	1.00
107	Oxford, G	N. S.	125,000	125,000	1	*	....	....	78,500	Sept 1888	.02
108	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	57,000	Apl. 1888	.15	150.000	Apl 1887	.10
109	Parrot, C	Mont	1,800,000	180,000	10	*	....	....	588,000	May 1890	.10
110	Peacock, S	N. M.	2,000,000	200,000	10	*	....	....	60,000	Nov. 1886	....
111	Plumas Eureka, G	Cal..	1,406,250	140,625	10	*	....	....	2,548,046	Oct. 1889	.37½
112	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*	....	....	20,000	Feb. 1886	.10
113	Plymouth Con., G	Cal..	5,000,000	100,000	50	*	....	....	2.280.000	Feb. 1884	.40
114	Quicksilver, pref., Q	Cal..	4,300,000	43,000	100	*	....	....	1,641,422	May 1890	1.50
115	" com., Q	Cal..	5,700,000	57,000	100	....	....	....	643,867	July 1882	.40
116	Quincy, C	Mich	1,000,000	40,000	25	200,000	Dec. 1862	....	5,370,000	Jan 1890	3.00
117	Republic, C	Mich.	5,000,000	100,000	50	400,000	Dec. 1889	.30	4,312,587	Jun 1887	1.25
118	Richmond, S. L	Nev..	1,350,000	54,000	25	*	....	....	99,785	Feb. 1880	.50
119	Ridge, C	Mich.	500,000	20,000	25	219,939	Mar 1886	.50	285,000	Mar. 1886	.05
120	Robinson Con., s. L	Colo.	10,000,000	200,000	50	*	....	....	100,000	Dec. 1882	.50
121	Robert E. Lee, S. L	Colo	10,000,000	500,000	20	*	....	....	4,460,000	July 1889	3.00
122	Savage, S	Nev..	11,200,000	112,000	100	6,542,000	July 1889	.50	7,500	Apl. 1883	.01
123	Shoshone, G	Idah.	150,000	150,000	1	*	....	....	1,568,140	Apl. 1888	.12½
124	Sierra Buttes, G	Cal..	2,225 000	122,500	10	*	....	....	102,000	Jan. 1871	1.00
125	Sierra Nevada, G. S.	Nev..	10,000,000	100,000	100	6,250,000	Oct. 1889	.50	270,000	Apl. 1889	.10
126	Sierra Nevada, s. L	Idaho	1,000,000	1	1	*	....	....	40,000	May 1889	.02
127	Silver Cord, G. S. L.	Colo.	4,500,000	450,000	10	*	....	....	270,000	Apl 1889	.10
128	Silver King, S	Ariz.	10,000,000	100,000	100	80,000	Jan. 1890	.30	1,950,000	July 1887	.25
129	Silver Mg. of L. Vs	N. M.	500,000	500,000	1	*	....	....	100.000	Apl. 1890	.05
130	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*	....	....	50,000	Jan. 1881	.25
131	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*	....	....	3,137,000	Jun 1889	.10
132	Spring Valley, G	Cal..	200,000	200,000	1	50,000	Oct. 1886	.25	3,595,000	Jun. 1888	.05
133	Standard, G. S	Cal..	10.000.000	100,000	100	50,000	Feb. 1890	.25	155,000	Nov. 1881	.05
134	Stormont, S	Utah	500,000	500,000	1	*	....	....	544.00	Dec 1887	.20
135	St. Joseph, L	Mo..	1,500,000	150,000	10	*	....	....	9.00	Apl. 1888	.02½
136	Swansea, G	Nev..	800,000	80,000	10	*	....	....	100,000	Nov 1881	.20
137	Tamarack, C	Mich.	1,000,000	40,000	25	520,000	Apl. 1886	3.00	1,561,000	July 1889	8.00
138	Tip Top, S	Ariz.	10,000,000	100,000	100	250,000	Sept 1883	.25	1,250,000	Apl 1884	.20
139	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*	....	....	97,500	Feb. 1886	2.50½
140	United Verde, C	Ariz.	3,000,000	300,000	10	*	....	....	37,500	Apl 1888	.37½
141	Valencia, M	N. H.	150.000	1,500	100	*	....	....	272,500	Oct. 1887	.10
142	Viola Lt., s. L	Idah.	750,000	150,000	5	*	....	....	1,275,000	July 1889	.05
143	Ward Cons., S. L	Colo.	2,000,000	200,000	10	*	....	....	20,000	Dec. 1871	1.50
144	Yankee Girl	Colo	2,500,000	250,000	10	*	....	....	2,184,000	Aug 1889	.10
145	Yellow Jacket, G. S.	Nev..	12,000,000	120,000	100	5,500,000	Mar 1890	.50	3,300	Jun 1889	.10
147	Webb City, L. Z	Mo..	55,000	11,000	5	....	....	....	25,000	Oct 1889	.25
148	Woodside	Utah	.....	.....	....	....	....	....	175,000	....	1889 .10
149	Young America	Cal..	.....	.....	....	....	....	....	....	....	....

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par Value.	Assessments. Total levied.	Date & am't of last.	
1	Agassiz Cons., s. L.	Colo.	$2,500,000	50,000	$50	*	....	....
2	Alleghany, S	Colo.	5,000,000	500,000	10	....	....	....
3	Alloues, C	Mich	2,000,000	80,000	25	$737,000	Jan.	1890 .50
4	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	583,750	July	1880 .87½
5	Alta, S	Nev..	10,000,000	100,800	100	2,248,800	Sept	1888 .50
6	Amador, G	Cal..	400,000	200,000	2	*	....	....
7	American Flag, S	Colo.	1,250,000	125,000	10	300,000	Jun	1877 .10
8	Amity S	Colo.	250,000	250,000	1	....	....	....
9	Anglo-Montana, Lt.	Mon.	600,000	120,000	5	....	....	....
10	Astoria, G	Cal..	200,000	100,000	2	....	....	....
11	Baltic Con., G	Nev..	5,000,000	200,000	25	*	....	....
12	Bechtel Con., G	Cal..	10,000,000	100,000	100	173,500	Jan.	1883 .10
13	Belmont, S	Nev..	5,000,000	50,000	100	735.000	Apl.	1886 .10
14	Best & Belcher, G. S.	Nev..	10,080,000	100,800	100	2,180,590	Jan.	1890 .25
15	Big Pittsburg, s. L.	Colo.	20,000,000	200,000	100	*	....	....
16	Bi-Metallic, S	Mon.	5,000,000	200,000	25	*	....	....
17	Black Oak, G	Cal..	3,000,000	300,000	10	*	....	....
18	Boston Con., G	Cal..	10,000,000	100,000	100	170,000	Nov	1883 .35
19	Bremen, S	N. M.	5,000,000	500,000	10	*	....	....
20	Brownlow, S	Colo.	250,000	250,000	1	....	....	....
21	Brunswick, G	Cal..	2,000 000	400,000	5	*	....	....
22	Bullion, G. S	Nev..	10,000,000	100,000	100	4,007,000	Aug.	1888 .50
23	Calaveras, G	Cal..	500,000	500,000	1	*	....	....
24	Carissa, S	Wy	500,000	100,000	5	*	....	....
25	Carupano, s. L. C.	Ven.	500,000	100,000	5	*	....	....
26	Cashier, G. S	Colo.	500.000	250,000	2	*	....	....
27	Charles Dickens, G.S.	Idah.	1,250,000	250,000	5	*	....	....
28	Cherokee, G	Cal..	1,500,000	150,000	10	....	....	....
29	Chollar, S	Nev..	11,200,000	112,000	100	1,484,000	July	1889 50
30	Cleveland, T	Dak.	1,000,000	500,000	2	*	....	....
31	Colchis, S	N. M.	500,000	50,000	10	....	....	....
32	Commonwealth, S	Nev.	10,000 ,000	100,000	100	170,000	Nov	1888 .50
33	Comstock, G. S	Nev..	10,000,000	100,000	100	30 000	Mar.	1887 .15
34	Con. Imperial, G. S.	Nev..	5,000,000	50,000	100	1,802,500	Nov.	1889 05
35	Con. Pacific, G	Cal..	6.000 000	60,000	100	192,000	Oct.	1889 .10
36	Cons. Silver, S	Mo..	2,500,000	250,000	10	....	....	....
37	Crescent, s. L	Colo.	3,000,000	300,000	10	....	....	....
38	Crocker, S	Ariz.	10,000,000	100,000	100	135,000	Jan.	1890 .10
39	Crowell, G	N. C	500,000	500,000	1	....	....	....
40	Dahlonega, G	Ga..	250,000	250,000	1	....	....	....
41	Dandy, S	Colo.	5,000,000	500,000	10	....	....	....
42	Decatur, S	Colo.	1,500,000	300,000	5	*	....	....
43	Denver City, s. L	Colo.	5,000,000	500,000	10	*	....	....
44	Denver Gold, G	Colo.	300,000	300,000	5	....	....	....
45	Durango, S	Colo.	500,000	500,000	1	*	....	....
46	Eastern Dev. Co., Lt.	N. S.	1,500,000	150 000	10	990,000	Mar.	1886 1.00
47	El Cristo, G. S	U.S.C	1,000,000	500,000	2	*	....	....
48	El Dorado, G	Cal..	1,000,000	250,000	4	*	....	....
49	El Talento, G	U.S.C	1,000,000	500,000	2	*	....	....
50	Empire, S	Utah	10,000,000	100,000	100	....	....	....
51	Eureka Tunnel, s. L.	Nev.	1,000,000	100,000	100	....	....	....
52	Exchequer	Nev.	10,000,000	100,000	100	515,000	Apl.	1889 .25
53	Found Treasure, G. S.	Nev..	10,000,000	100,000	100	30,530	Apl.	1889 2½
54	Gogebic I. Syn., I	Wis.	5,000,000	200,000	25	....	....	....
55	Gold Cup, S	Colo.	500,000	500,000	1	*	....	....
56	Golden Era, S	Mon.	2 000,000	200,000	10	*	....	....
57	Gould Placer, G	Colo.	5,000,000	200,000	25	229,314	Dec.	1886 .25
58	Gold Rock, G	Cal.	1,000,000	500,000	2	*	....	....
59	Goodshaw, G	Cal..	10,000,000	100,000	100	....	....	....
60	Grand Belt, C	Tex.	12,000,000	120,000	100	....	....	....
61	Grand Duke	Colo.	800,000	80,000	10	....	....	....
62	Great Remance, G	U.S.C	1,000,000	500,000	2	*	....	....
63	Gregory-Bobtail, G	Colo.	550,000	550,000	1	*	....	....
64	Gregory Con., G	Colo.	3,000,000	300,000	10	....	....	....
65	Harlem M. & M. Co., G.	Cal..	5,000,000	200,000	5	....	....	....
66	Head Cent. & Tr. s. G	Ariz.	10,000,000	100,000	100	....	....	....
67	Hector, G	Cal..	1,500,000	300,000	5	45,000	Jan.	1889 .15
68	Highland, C	Mich	500,000	25,000	20	....	....	....
69	Hollywood	Cal..	200,000	100,000	2	....	....	....
70	Hortense, S	Colo.	2,000,000	200,000	10	....	....	....
71	Huron, C	Mich	1,000,000	40,000	25	280,000	May	1887 3.00
72	Iron Gold & Silver, s	N. M.	2,000,000	200,000	10	*	....	....
73	Ironton, I	Wis.	1,000,000	40.000	25	....	....	....
74	Iroquois, C	Mich	1,250,000	50,000	25	....	....	....
75	J. D. Reymert	Ariz.	10,000,000	100,000	100	....	....	....
76	Julia Cons., G. S	Nev..	11,000,000	110,000	100	1,660,000	Jan.	1889 .10
77	Lacrosse, G	Colo.	1,000,000	100,000	10	*	....	....
78	Lee Basin, G	Colo.	5,000,000	500.000	10	*	....	....
79	Mayflower Gravel	Cal..	1,000,000	100,000	10	585,000	Mar.	1890 .50
80	May Mazeppa, S	Colo.	500,000	500,000	1	*	....	....
81	Medora, G	Dak.	250,000	250,000	1	*	....	....
82	Mexican, G. S	Nev..	10,000,000	100,000	100	2,800,760	Dec.	1889 .25
83	Middle Bar G	Cal.	400,000	200,000	2	*	....	....
84	Mike & Starr, S. L	Colo.	1,000,000	200,000	5	*	....	....
85	Mollie Gibson	Colo.	2,000,000	100,000	2	....	....	....
86	Monitor, G	Colo.	100,000	1,000,000	1	*	....	....
87	Mutual Mg. & Sm.	W'sh	100,000	1,100,000	1	*	....	....
88	Native, C	Mich	1,000,000	40,000	25	....	....	....
89	Neath, G	Colo.	1,000,000	100,000	10	....	....	....
90	Nevada Queen, G. S.	Nev..	10,000,000	100,000	100	250,000	Oct.	1889 .25
91	New Germany, G	N. S.	100,000	100,000	1	*	....	....
92	New Pittsburg, s. L.	Colo.	2,000,000	200,000	10	*	....	....
93	N. Commonw'h, S	Nev.	10,000,000	100,000	100	60,000	Apl	1889 ...
94	North Standard, G	Cal..	10,000,000	100,000	100	20,000	Nov	....
95	Noonday	Cal..	600,000	60,000	10	208,000	Dec	1881 10
96	Oneida Chief, G	Cal.	500,000	125,000	100	*	....	....
97	Oriental & Miller, S.	Nev..	10,000,000	400,000	25	*	....	....
98	Osceola, G	Nev..	5,000,000	500,000	10	....	....	....
99	Overman, G. S	Nev.	11,520,000	115,200	100	3,823,460	Dec.	1889 ....
100	Park, S	Utah	2,000,000	200,000	10	....	....	....
101	Peer, S	Ariz.	10,000,000	100,000	100	155,000	Sept	1889 .10
102	Peerless, S	Ariz.	10,000,000	100,000	100	370,000	Mar.	1889 .25
103	Phenix	Ariz.	500,000	500,000	1	*	....	....
104	Phenix, G. S.	Ariz.	5,000,000	200,000	25	*	....	....
105	Phœnix Lead, s. L.	Colo.	100,000	100,000	1	*	....	....
106	Pilgrim, G	Cal..	600,000	300,000	2	*	....	....
107	Potosi, S	Nev..	11,200,000	112,000	100	1,461,600	Sept	1889 .50
108	Proustite

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	June 14.		June 16.		June 17.		June 18.		June 19.		June 20.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Alice, Mont	2.80	...	2.75	...	...	...	2.70	...	...	...	...	...	1,000
Argenta, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Aspen Mg, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Belcher	...	...	...	...	...	...	...	...	...	...	...	...	...
Belle Isle, Nev	.80	...	1.00	.80	.97	...	...	...	.90	...	.90	...	750
Bodie Cons., Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Bos. & Mont., Mont	...	...	...	...	...	...	...	...	...	...	...	...	...
Breece, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Bulwer, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Caledonia	2.00	...	2.00	1.90	...	...	1.90	...	...	...	...	...	100
Chryso lite, Colo	...	...	...	...	...	...	40.00	...	...	...	...	...	100
Colorado Central	...	...	...	...	...	...	...	...	...	...	...	...	...
Confidence, Nev	...	...	...	...	8.00	...	...	...	...	...	...	...	50
Cons. Cal. & Va., Nev.	4.90	...	4.80	...	4.90	...	5.00	4.70	4.85	4.75	5.20	5.00	1,500
Crown Point, Nev	3.10	...	...	...	...	...	...	...	3.00	...	3.30	...	300
Deadwood, Dak	...	...	...	...	...	...	...	...	1.50	...	...	...	100
Dunkin, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Eureka Con	...	...	...	...	...	...	...	...	...	...	...	...	...
Excelsior, Cal	...	...	.4	...	...	...	...	...	...	...	...	...	...
Franklin, Mich	...	...	...	...	...	...	...	...	...	...	...	...	...
Freeland, Colo	.63	.60	.60	.55	...	...	.58	.55	...	...	...	...	3,000
Gould & Curry, Nev	...	...	2.70	2.50	...	...	3.00	...	...	...	...	...	500
Hale & Norcross, Nev	...	...	...	...	3.40	...	3.15	...	...	...	...	...	250
Homestake, Dak	11.00	...	11.25	...	11.50	...	...	...	...	...	...	...	950
Horn-Silver, Ut	3.50	3.42	3.50	...	3.50	...	3.50	...	3.50	3.35	3.45	...	2,050
Independence, Nev	...	...	...	...	...	...	...	...	...	...	.25	...	500
Kentuck, Nev	2.00	...	...	...	...	...	...	...	...	...	...	...	300
Leadville C., Colo	...	...	.12	...	.12	...	.12	...	.14	.11	.12	...	12,400
Little Chief, Colo	...	...	.31	...	...	...	...	...	...	...	...	...	800
Little Pittsburg, Colo	...	...	...	...	.55	...	...	...	...	...	...	...	...
Mono, Cal	...	...	...	...	...	...	...	...	...	...	...	...	300
Moulton	...	...	...	...	...	...	...	...	...	...	...	...	...
Navajo, Nev	.55	...	.55	...	...	...	...	...	...	...	...	...	100
North Belle Isle, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
North Star, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Ontario, Ut	...	...	45.00	...	44.25	...	...	...	...	...	...	...	37
Ophir, Nev	...	...	...	...	4.80	...	...	...	...	...	...	...	300
Osceola, Mich	...	...	...	...	...	...	...	...	...	...	...	...	...
Plymouth, Cal	8.13	...	8.38	7.75	...	...	7.50	...	...	...	7.50	...	630
Quicksilver, Pref	...	...	43.00	48.00	...	...	...	...	...	...	...	...	300
" Com	8.00	...	8.50	...	...	...	...	...	...	...	7.75	...	300
Quincy, Mich	...	...	...	...	...	...	...	...	...	...	...	...	...
Robinson Cons. Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Savage, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Sierra Nevada, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Cord	...	...	...	...	...	...	.50	.45	...	...	.50	...	700
Silver King	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Mg. of L. V	...	...	...	...	...	...	.45	.44	...	...	...	...	50
Small Hopes, Colo	...	...	...	...	...	...	.90	.85	...	...	...	...	1,200
Standard, Cal	.10	...	...	...	.12	.11	...	...	.14	.11	.14	...	1,900
Stormont, Utah	...	...	...	...	...	...	...	...	...	...	...	...	...
Yellow Jacket, Nev	3.20	...	...	...	...	...	...	...	...	...	...	...	100

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	June 14		June 16.		June 17.		June 18		June 19.		June 20.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha, Nev	...	...	...	...	2.25	...	...	...	...	...	...	...	0
Alta, Nev	1.40	...	1.40	...	...	...	1.35	...	...	...	1.40	...	...
Andes, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Amador, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
American Flag, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Astoria, Cal	.01	...	...	...	...	...	.04	...	...	...	...	...	2,500
Bechtel	...	...	...	...	...	...	...	...	...	...	...	...	100
Best & Belcher, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Bonanza King, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Brunswick, Cal	1.00	...	1.20	1.00	1.25	.95	.95	.94	.95	...	95	...	11,500
Bullion, Nev	3.50	...	...	...	4.25	...	4.15	...	4.35	...	...	...	400
Eutte & Bost, Mont	...	...	...	...	...	...	...	...	...	...	...	...	...
Castle Creek, Id	...	...	...	...	...	...	...	...	...	...	...	...	...
Chollar, Nev	...	...	4.40	...	4.10	...	...	...	4.15	...	...	...	300
Col. & Beaver, Id	...	...	...	...	...	...	...	...	...	...	...	...	...
Commonw'l, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Comstock T., Nev	...	...	.17	...	18	...	...	...	...	...	...	...	800
" bonds	...	...	...	...	...	...	...	...	...	...	...	...	...
" scrip	...	...	...	...	...	...	...	...	...	...	...	...	...
Con. Imperial, Nev	.50	...	...	...	.60	...	...	...	...	...	...	...	400
Denver City, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
El Cristo, Rep of Col	1.05	...	...	...	...	...	...	...	1.00	...	1.00	...	300
Exchequer	...	...	...	...	1.25	...	...	...	...	...	...	...	100
Gold Strip, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Julia, Nev	.55	...	.55	...	.75	...	.55	...	.55	...	...	...	1,300
Kingst'n & Pemb'ke	...	...	...	...	...	...	...	...	...	...	...	...	...
Kossuth, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Lacrosse, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Lee Basin, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Mexican, Nev	3.60	...	...	...	3.70	...	3.60	...	...	...	...	...	300
Minn Iron Co., Mich	87.88	87.00	88.50	87.00	...	...	...	...	88.00	...	...	...	900
Moniter	...	...	...	...	...	...	...	...	...	...	...	...	...
Mutual Sm. & M. Co	...	...	...	...	1.55	...	1.60	...	1.55	...	...	...	450
Nevada Queen, Nev	...	...	...	...	1.10	...	...	...	...	...	...	...	200
N. Com'nw'th, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Occidental, Nev	...	...	...	...	...	...	...	...	...	...	*1.35	1.30	700
Oriental & Mil., Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Overman, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Phoenix of Ariz	1.50	1.45	1.45	1.20	1.40	...	1.45	1.40	1.44	1.35	1.35	1.25	6,135
Potosi, Nev	...	...	...	...	5.75	...	...	...	...	...	...	...	100
Rappahann'k, Va	...	...	...	...	...	...	...	...	...	...	...	...	...
Ruby S. M. Co., bds	...	...	...	...	...	...	...	...	...	...	...	...	...
Santiago U. S. C	...	...	...	...	...	...	...	...	...	...	...	...	...
S. Sebastian	...	...	...	...	...	...	...	...	.20	...	.30	...	400
Scorpion	...	...	...	...	...	...	...	...	...	...	...	...	...
Silver Queen	...	...	...	...	...	...	...	...	...	...	...	...	...
Sutro Tunnel, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
" Trust Cert	...	...	...	...	...	...	...	...	...	...	...	...	...
Sutter Creek, Cal	1.40	...	1.40	...	1.40	1.35	1.35	...	1.35	...	1.35	...	1,600
Tornado, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Union Cons., Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Utah, Nev	1.15	...	1.20	...	1.20	...	1.20	...	1.25	...	1.25	...	800
Wall St M. & M. Co	...	...	...	...	...	...	...	...	...	...	...	...	...

*Ex dividend. †Dealt in at the New York Stock Ex. Unlisted securities ‡Assessment paid. Dividend shares sold, 40,870 Non-dividend shares sold, 29,768. Total, New York, 70,635

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	June 13.		June 14.		June 16.		June 17*		June 18.		Jun 19.		SALES.
Atlantic, Mich	26.00	24.25	28.00	26.25	28.00	27.0	...	...	28.00	27.25	28.00	27.25	4,790
Bodie, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Bonanza Developm't	1.15	1.10	1.10	1.05	1.10	...	...	...	1.15	...	...	...	2,150
Bost. & Mont., Mont	67.50	66.75	67.25	66.50	67.25	65.50	...	...	67.00	65.88	66.25	65.50	4,648
Breece, Colo	...	...	...	...	...	...	...	...	40	...	...	...	300
Calumet & Hecla, Mich	319	316	319	...	315	314½	...	...	323	319	320	310	934
Catalpa, Colo	40	...	40	...	.50	.43	...	...	.58	.50	.53	.50	29,400
Central, Mich	27.50	25.00	31.00	30.50	32.00	...	...	...	33.00	32.00	...	...	525
Chrysolite, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Con. Cal. & Va., Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Dunkin, Colo	...	...	...	...	.65	...	...	...	...	...	...	...	100
Eureka, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Franklin, Mich	22.50	22.00	22.25	21.75	21.50	...	...	...	21.75	21.00	21.50	21.75	1,100
Freeland, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Kearsarge	26.50	24.50	26.00	23.00	25.25	24.50	...	...	24.50	24.50	24.50	23.25	10,885
Little Chief, Colo	...	...	...	...	.34	...	...	...	...	...	...	...	800
Little Pittsburg, Colo	...	...	...	...	...	...	...	...	...	...	...	...	...
Martin White, Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Moulton	...	...	...	...	...	...	...	...	...	...	...	...	...
Napa, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Ontario, Utah	...	...	...	...	...	...	...	...	48.38	46.75	47.25	46.00	7,676
Osceola, Mich	48.00	47.00	47.50	46.00	48.00	46.25	...	...	...	...	...	...	45
Pewabic, Mich	12.50	...	...	...	...	...	...	...	...	...	...	...	669
Quincy, Mich	130½	125	129	126	132½	130	...	...	131	128	128	...	1,375
Ridge, Mich	...	...	2.00	1.50	1.75	1.63	...	...	...	...	...	...	...
Sierra Nev., Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Standard, Cal	...	...	...	...	...	...	...	...	...	...	...	...	...
Stormont, Utah	...	...	...	...	...	...	...	...	...	...	...	...	...
Tamarack, Mich	219	205	213	210	216	212	...	...	227	221	22	2.3	943

NAME OF COMPANY	June 13		June 14.		June 16.		June 17*		June 18.		June 19		SALES.
Allouez, Mich	7.38	7.00	8.00	7.50	8.00	7.63	...	...	7.88	7.75	8.00	7.63	11,420
Arnold, Mich	1.85	1.70	1.95	1.80	2.25	2.13	...	...	2.25	2.00	2.13	2.00	8,450
Aztec, Mich	.28	.25	.28	.25	.25	.38	...	...	...	...	.30	...	3,450
Bowman S., Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Butte & Bost., Mont	26.75	25.25	26.50	25.00	26.25	25.25	...	...	25.50	24.75	25.00	24.75	4,599
Centennial, M ch	40.00	39.00	40.00	39.00	39.00	...	...	...	40.00	39.50	39.25	37.50	3,251
Comstock, T	...	...	...	...	...	...	...	...	...	...	...	...	...
Copper Falls Mg,	...	...	...	...	...	...	...	...	...	...	...	...	...
Crescent, Colo	.40	.11	...	...	.17	.15	...	...	.20	.15	.18	.15	20,040
Dana, M ch	...	...	...	...	.40	.38	...	...	.45	...	.45	...	3,600
Don Enrique, N. M	...	...	...	...	...	...	...	...	...	...	...	...	...
El Cristo, S. A	...	...	...	...	...	...	...	...	...	...	...	...	...
Hanover, Mich	.55	.54	.55	.53	.60	.54	...	...	.60	.58	...	...	5,500
Humboldt, Mich	.70	.55	...	...	.56	...	...	...	...	...	...	...	1,400
Hungarian, Mich	.45	...	.50	...	.53	.50	...	...	.60	...	.60	...	2,250
Huron, Mich	6.00	5.00	5.88	4.75	5.38	5.00	...	...	5.50	4.88	4.88	...	9,270
Mesnard, Mich	...	...	...	...	...	...	...	...	...	...	1.00	...	50
National, Mich	3.00	...	3.00	...	3.25	3.00	...	...	...	...	...	...	415
Native, Mich	.30	.25	.30	...	.33	.28	...	...	.35	.33	.35	...	10,150
Oriental & M., Nev	...	...	...	...	...	...	...	...	...	...	...	...	...
Phoenix	1.42	...	...	...	...	...	...	...	...	...	...	...	400
Pontiac	...	...	...	...	.55	...	...	...	.45	...	.50	...	800
Rockland	...	...	...	...	...	...	...	...	...	...	...	...	...
Santa Fe, N. Mex	.90	...	.90	.85	.93	.90	...	...	.95	.93	.90	.80	8,200
Shoshone, Idaho	...	...	...	...	...	...	...	...	...	...	...	...	...
South Side, Mich	.38	.30	...	...	.35	...	...	...	.35	...	.35	...	4,700
Star	...	...	.38	...	.40	.36	...	...	.40	...	...	...	2,300
St Louis C.C., Mich	...	...	.50	...	...	...	...	...	...	...	...	...	100
Washington, Mich	.42	.35	...	...	.40	...	...	...	.53	.45	.50	...	6,800

* Anniversary of Bunker Hill. Boston: Dividend shares sold, 66,310 Non-dividend shares sold, 106,945. Total Boston, 173,255.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	June 14.		June 16.		June 17.		June 18		June 19		June 20.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cambria Iron	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cameron Coal & Iron Co	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ches. & O. RR	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Chic. & Ind. Coal RR	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Do. pref	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Col. & Hocking Coal	100	32¼	...	32⅛	32¼	32	...	32	31	31	30	31¼	...	1,549
Col., C. & I	100	53	...	53⅛	53¼	52⅛	...	52⅞	52⅛	52	51¾	52	...	3,900
Consolidation Coal	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Del. & H. C	100	...	...	...	...	...	...	169¼	...	166¼	...	168	167¼	570
D., L. & W. RR	50	145⅛	145¼	146	145½	145⅞	145⅛	145⅝	144¼	144⅜	143⅜	145	14 ¾	28,667
Hocking Valley	100	...	...	24¼	...	...	...	24½	24⅛	24	23¾	24	23¾	1 080
Hunt. & Broad Top	...	...	...	...	...	23⅛	23¼	...	...	22⅛	...	...	...	880
Do. pref	...	49½	49	49	...	...	...	48¾	...	48½	48	...	...	1,104
Illinois Coal & Coke Co	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lehigh C. & N	50	...	...	52¼	...	...	...	52¼	...	...	...	...	...	56
Lehigh Valley RR	50	52½	...	52½	...	52⅛	52⅜	52⅛	...	52⅜	52¼	...	...	786
Lehigh & Wilkesb. Coal	100	...	...	...	...	...	...	...	...	25	...	...	...	200
Mahoning Coal	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Marshall Con. Coal	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maryland Coa	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Morris & Essex	100	...	...	...	...	153⅛	...	...	...	...	...	...	...	10
New Central Coal	50	...	...	...	...	...	...	...	...	...	...	101½	...	100
N. J. C. R.R.	100	125⅛	...	125⅛	125	124¼	...	125	123½	124½	123	124½	...	1,705
N. Y. & S. Coal	100	...	...	...	...	...	...	...	...	...	...	...	...	...
N. Y., Susq. & Western	100	7¾	...	...	...	...	...	...	...	...	...	8	...	130
Do. pref	100	32	...	...	...	...	...	...	...	...	...	...	...	100
N. Y. & Perry C. & I	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Norfolk & Western R.R.	50	...	...	...	...	...	...	...	...	...	...	...	...	...
Do. pref	50	63	...	62⅝	62¼	61¾	61⅛	62¼	61⅛	62⅛	62⅛	63	62½	3,206
Penn. Coal	50	...	...	...	...	90	...	...	...	...	...	...	...	79
Penn. RR	50	53¾	53⅝	53¾	53¼	53⅛	53¼	53⅛	53⅛	53¼	53	...	...	2,722
*Ph. & R. RR	...	46⅝	46¼	46¾	46⅜	46⅜	45⅞	46⅛	44⅛	44⅛	43⅞	45	44¼	**86,360
Sunday Creek Coal	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Do. pref	100	...	...	...	...	...	...	...	...	...	...	...	...	...
Tennessee C. & I. Co	...	...	...	52	50½	50⅛	49⅛	50	49⅛	49¾	...	50½	49½	4,200
Do. pref	...	...	...	...	...	...	...	101	...	...	...	...	...	100
Westmoreland Coal	...	...	...	...	...	...	...	...	...	...	...	...	...	...

**Sales in New York, 53,645; in Philadelphia, 32,715. Total sales, 137,494.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. June 13.	June 14.	June 16.	June 17	June 18.	June 19.
Alpha	...	...	...	...	...	...
Alta	1.25	1.30	1.35	1.30	1.35	1.35
Belcher	...	...	...	...	...	...
Belle Isle	...	.90	1.00	.85	1.00	.95
Best & Bel.	3.60	3.85	3.90	4.05	4.00	4.05
Bodie	...	.75	.70	.55	.65	.65
Bulwer	...	...	...	...	...	.20
Chollar	3.75	4.30	3.90	3.90	4.15	4.05
C'm'weal'h	3.70	...	...	3 60	3.65	3.65
Con. C. & V	4.70	4 90	4.75	4.80	4.90	4.85
Con. Pac	...	...	...	...	...	...
Crown Pt	3.00	3.05	2.95	3.00	2.95	3.25
Eureka C	4.00	4.00	...	...	4.00	...
Gould & C	2.45	2.60	2.75	2.95	3.05	3.10
Grd. Prize	...	...	...	...	...	...
Hale & N	2.80	2.90	3.25	3.20	3.70	3.80
M. White	...	...	...	...	...	...
Mexican	3.50	4.55	3.65	3.50	3.60	3.65
Mono	...	.40	...	.40	.45	.40
Mt. Diablo	...	...	...	...	...	...
Navajo	...	...	.45	.50	...	.50
Nev. Queen	1.05	.95	.95	...	...	.90
N. Belle I	1 60	...	1.60	1.60	1.4	...
Occidental	...	...	...	...	...	...
Ophir	4.40	4 60	4.60	4.60	4.70	4.65
Potosi	6.75	7.38	5.38	5.88	7.00	9.25
Savage	2.20	2.70	3.80	4.05	4.20	4.50
Sierra Nev	3.10	3.25	3.30	3.25	3.30	3.35
Union Con	3.05	3.15	2.95	...	3.00	3.00
Utah	1 05	1.10	1.10	...	1.15	1.20
Yellow Jkt	3.00	3.10	3.10	...	3.20	3.25

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid. L. H.	Asked. L. H.
Atlantic Coal	....	$ 50
Balt. & N. C.	05	10
Big Vein Coal	....	....
Conrad Hill	05	10
Cons. Coal	26@26¼	26¼@27¼
Diamond Tunnel	25@30	30@40
George's Crk. C.	....	....
Lake Chrome	18	25
Maryland & Charlotte	....	....
North State	....	....
Silver Valley	43@50	55

Prices bid and asked, lowest and highest, during the week ending June 18.

Birmingham, Ala.

COMPANY.	Bid. L. H.	Asked. L. H.
Ala. R. Mill Co.	....	$60
*Alice Furnace	$103	....
Anna Howe M'g. Co.	$¾	$¾
Bessmer Land	$36@$36½	$37½
Bir. Mg.& M'g.	....	$83
Cahaba Coal Mg. Co.	....	$70
Camille Gold Mg. Co.	$½	....
De Bardeleben C. & I. Co.	....	$76
Decat. L. Imp.	$13¾	....
Decatur Min. L.	....	$22¾
Ensley Land	$10½@$10¾	$10⅝
*Eureka	$130	$300
Florence L. & Mg. Co.	$20	$22
Gadsen Land	$6	$6¼
Hecla Coal Co.	$30	....
Hen. S. & M. Co	....	$85
Mag-Ellen	$100	....
Mary Lee C. & R. Co.	$20	....
Sheffield C & I. Co.	$60	$61
Sloss I. & S.	$44	....
†Sloss I. & S.	$93⅛@$93½	$94
††Sloss I. & S.	....	$78
Tuscaloose C. I. & L. Co	$24	$27
Tenn. C. & I. Co.	....	$51
" pref.	$104	$106
Woodstock I. Co.	....	$40¼@$40½

Prices, highest and lowest, bid and asked during week ending June 16.

* Bonds. † First mortgage. †† Second mortgage.

Pittsburg, Pa.

COMPANY.	B.	A.	Closing
Allegheny Gas Co.	$38.00	....	$38.00
Bridgewater Gas Co.	56.00	$61.00	57.00
Chartiers Val. Gas	....	42.50	42.50
Columbia Oil Co.	2.00	2.75	2.50
Consolidated Gas Co.	....	....	....
East End E. Light Co.	60.00	....	60.00
East End Gas Co	....	....	....
Forest Oil	....	....	....
Hazlewood Oil Co.	....	....	....
La Noria Mining	.17	.20	.20
Luster Mg. Co.	15.00	17.50	16.75
Manuf'turers Gas Co.	12.00	20.00	20.00
Nat. Gas Co. of W. Va	....	....	....
N. Y. & Clev. Gas Coal	30.50@30.88		30.75
Ohio Valley Gas	....	....	....
Mansfield C. & C. Co.	....	....	....
Pennsylvania Gas	14.00	....	14.00
People's Natural Gas	....	....	....
People's N. G. & P. Co.	15.75	16.25	16.13
Philadelphia Co.	31.00	31.50	31.25
Pine Run Gas Co.	....	....	....
Pittsburg Gas	....	....	....
Silverton Mg. Co.	....	....	....
South Side Gas	....	....	....
Tuna Oil Co.	....	....	....
Union Gas	....	....	....
Washington Oil Co.	89.00	....	89.00
W'house Brake Co.	63.00@63.50		63.50
W'house A. B. Co.	118.90	125.00	119.00
W'house E. Light	38.00	39.75	39.25
W'moreland & Camb.	....	....	....
Wheeling Gas	19.75	20.13	17.75
Yankee Girl Mg	....	....	....

* Actual selling price.

Prices bid, asked and closing during the week ending June 19.

Sales during the week ending June 19:

Luster Mining	45 shs.	$16¼@$17½
Philadelphia Co.	245 "	$31½@$31½
West. Air B. Co.	4 "	@ $120
West. Electric	235 "	$38 @ $39½
Wheeling Gas	70 "	@$20

St. Louis. June 18.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo.	$ .92	$ .93¾
American & Nettie	2.00	2.05
Anderson	....	....
Aztec, N. Mex.	.10	.10½
Bi-Metallic	28 00	....
Black Oak, Cal	....	....
Black Spar	....	....
Bremen	....	....
Buckskin	.06½	.07
Carriboo, Idaho	....	....
Central Silver	.15	.16¼
Cleveland, Colo.	.03	.04
Cleveland, Idaho	....	....
Cœur d'Alene	....	.95
Dinero, Colo	....	....
Golden Era, Mont.	....	....
Golden King	....	....
Gold Run	....	....
Golden West	.02	.05
Granite Mountain, Mont.	44.00	....
Hope, Mont.	2.25	....
Ingram	....	.60
Iron Clad	....	....
Ivanhoe, Colo.	....	.10
I. X. L., Colo.	....	....
Keystone	.01½	.02
La Union	.08½	.09½
Little Albert	.25	.40
Little Giant	....	....
Major Budd, Mont.	.05½	.09
Mexican Imp., Mex.	....	....
Michael Breen	1.05	1.07½
Montrose Placer, Colo.	....	....
Mountain Key	.40	.42½
Mountain Lion	06	....
Neath, Colo.	....	....
Old Colony	....	....
Old Jesuit	....	....
Pat Murphy, Colo.	.09	.11
Pedro	....	....
Phillips, Colo.	....	....
Pine Grove, Idaho	.01	.02
Queen of the West, Idaho	....	....
Raspberry, Mont.	....	....
San Francisco, Mont.	....	....
Silver Age, Colo.	1.35	1.50
Silver Bell	....	....
Small Hopes, Colo.	.85	1.00
Tourtelotte, Colo.	.03	.03½
West Granite, Mont.	1.05	....
Wire Patch	.15	.16¼
Yuma, Ariz.	.60	.61¼

Trust Stocks. June 20.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

Am. Cotton Oil. Tr. Repts.	$29½@$3 ½
Cattle Trust	14 @ 15½
Distillers' & Cattle Feeders'.	46½@ 46½
Linseed Oil	51½@ 53
National Lead	20¼@ 20½
Natural Gas	.... @ ....
Standard Oil	166 @169½
Sugar Refineries.	75½@ 76⅝

Sales at the New York Stock Exchange week ending June 20:

	Sales.	Price H.	Price L.
*American Cotton Oil	1,880	31	29¾
National Lead	12,790	21¼	20
Sugar	144,145	83¾	75⅝

*Trust receipts.

Foreign Quotations.

London.

COMPANY.	Highest.	Lowest.
Almada, Mex.	1s. 9d.	1s. 3d
Amador, Cal	£¾	£⅝
Appalachian, N. C.	9d.	6d.
Canadian Phos, Canada.	£¼	£¼
Carlisle, N. Mex	3s 6d.	3s.
Colorado, Colo.	£7-16	£3-16
Comstock, Utah	....	....
Condova	....	....
Cons. Esmeralda, Nev.	3s.	2s. 6d.
Denver Gold, Colo.	1s.	6d.
Dickens Custer, Idaho.	1s. 6d.	1s.
East Arevalo, Idaho.	2s.	1s.
Eberhardt, Nev.	....	....
El Callao, Venezuela	£2⅝	£2⅜
Elmore, Idaho	2s. 3d.	1s. 9d.
Empire, Mont	1s. 3d.	9d.
Garfield, Nev.	2s 9d.	2s. 3d.
Jay Hawk Mont	2s. 6d.	1s. 6d.
Josephine, Cal	1s. 6d.	1s.
Kohinoor, Colo	2s 3d.	1s. 9d.
La Luz, Mex.	1s.	6d.
La Valera, Mexico	17s. 6d.	12s. 6d.
Montana Lt., Mont	£1 5-16	£1 3-16
New California, Colo.	8s 3d.	7s. 9d.
New Consolidated	9d.	3d.
New Eberhardt, Nev.	£⅛	....
New Emma, S. Utah	£3-16	£1-16
New Flagstaff Utah	2s. 3d.	1s. 9d.
Newfoundland, N. F.	3s. 6d.	2d.
N Gold Hill, N. C.	1s 6d.	1s.
New Guston, Colo.	£4⅛	£1⅝
New Hoover Hill, N. C.	£⅛	....
Old Lout, Colo.	£13-16	£11-16
Palmarejo, Mex	16s 6d.	15s. 6d.
Pinos Altos, Mex	£11-16	£9-16
Pittsburg Cons., Nev.	7s. 6d.	6s. 6d.
Richmond Con. Nev.	1⅝s	1⅛s
Ruby & Dunderberg, Nev	2s. 3d.	1s. 9d.
Sam Christan, N. C.	1s. 3d.	9d.
Sierra Buttes Cal.	4s.	3s.
" Plumas Eur.	£15-16	£13-16
Sonora, Mex.	1s.	6d.
Stanly, N. C.	....	....
United Mexican, Mex.	7s.	6s.
U. S. Placer, Colo.	2s. 6d.	2s.
Viola Lt., Idaho	2s. 3d.	1s. 9d.

Highest and lowest prices during the week ending June 7.

Paris.

	Francs	Francs.
Belmez, Spain	742.50	742.50
Callao, Venez.	61 25	61.25
Callao Bis, Venez.	4.00	4.00
East Oregon, Ore.	8 25	8 25
Forest Hill Divide, Cal	120.00	120.00
Golden River, Cal	350.00	350.00
" " parts	35.00	35.00
Lexington, Mont.	121.25	121.25
" parts	3.00	3.00
Ouray, Colo.	....	....
Rio Tinto, Spain	435.00	435 00
Tharsis, Spain	140 00	140.00

Highest and lowest prices during the week ending June 5.

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs. $1.75@$2.00
Muriatic, 18°, ℔ 100 lbs. 1.00@1.50
Muriatic, 20°, ℔ 100 lbs. 1.12½@1.75
Muriatic, 22° ℔ 100 lbs. 1.37½@2.00
Nitric, 36°, ℔ 100 lbs. 4.00@4.25
Nitric, 42°, ℔ 100 lbs. 6.00@6.25
Oxalic, ℔ 100 lbs. 6.50@10.50
Sulphuric, 60°, ℔ 100 lbs. 80@1.25
Sulphuric, 66°, ℔ 100 lbs. 1.00@1.75

Alkali—
Refined, 48 p. c. @2¾
Refined, 58°. 2¾@3
Alum—Lump, ℔ lb. 1¾
Ground, ℔ lb. 1¾@2
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton. £4 10
Aqua Ammonia—18°, ℔ lb. 4¾
20°, ℔ lb. 6
22°, ℔ lb. 6@7
26°, ℔ lb. 10@11
Ammonia—Sul., ℔ 100 lbs. 3.15
Carb, per lb. 7½@8½
Arsenic—White, powdered, ℔ lb. 3¼@3½
Red. ℔ lb. 5¾@6¾
White, at Plymouth, ℔ ton. £12 2 6d.
Asbestos—Am., p. ton. $50@$300
Italian, p. ton, c. i. f. L'pool. £18@£60
Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb. 4½@5½c
Hard Cuban, ℔ ton. $28.00
Trinidad, refined, ℔ ton. $30.00
Barytes—Sulph., Am. prime white 17@20
Sulph., foreign, floated, p. ton 19½@21.50
Sulph., off color, p. ton 11.50@14.00
Carb., lump, f.o.b. L'pool, ton. £6
No. 1, casks, Runcorn " £4 10 0
No 2, bags, Runcorn " 3 15 0
Bleach—Over 35 p.c., ℔ lb. 2@2½
Borax—Refined, ℔ lb. 9½@9⅝
Concentrated 7¾@8⅜
Refined at Liverpool, ℔ ton. £29
Brimstone—*See Sulphur.*
Bromine—℔ lb. 37@38
Chalk—℔ ton. 1.75
Precipitated, ℔ lb. 4¾@5
China Clay—English, ℔ ton 13.50@18.50
Southern, ℔ ton 13.50
Chrome Yellow—℔ lb. 10@25
Cobalt—Oxide, ℔ lb. 2.60@2.90
Copper—Sulph. English Wks, ton £20@£21
Copperas—Common, ℔ 100 lbs. 70
Best. ℔ 100 lbs. .75@1.00
Liverpool, ℔ ton, in casks. £1 15s.
Cream of Tartar—Am. 99%. 22½
Powdered, 99 p. c. 23
Emery—Grain, ℔ lb. 4½@5
Flour, ℔ lb. 2¾@3½
Feldspar—Ground, ℔ ton. 15.00
Fuller's Earth—Lump, ℔ bbl. .90@95
Powdered, ℔ lb. 1¾@2
Gypsum—Calcined, ℔ bbl. 1.25@1.50
Iodine—Resublimed 2.75
Kainit—℔ ton. $9.25@$9.75
Kaolin—*See China Clay.*
Lead—Red, ℔ lb. 6¾@9
White, American, in oil, ℔ lb. 6¾@7¼
White, English, ℔ lb 8½@8¾
Acetate, or sugar of, white 12@13
Lime Acetate—Amer. Brown. .95@1.00
" Gray 1.75@1.87½
Litharge—Powdered, ℔ lb. 6½@6¾
English flake, ℔ lb. 9@9½
Magnesite—Greek, ℔ ton. 20.00
Manganese—Crude, per unit 23@.28
Oxide, ground, per lb 2½@6½
Mercuric-Chloride—(*Corrosive Sublimate*) ℔ lb. 70@72
Mineral Wool—℔ lb. 2
Mica—In sheets according to size, 1st quality, ℔ lb. 25@$6.00
Ochre—Yellow, "B. F.," ℔ ton, f.o.b. mill 30.00
"J. F. L. S.," ℔ lb. ex dock 2½
Phosphate Rock—S. Carolina, per ton . o. b. Charleston. 5.75@7.00
Ground, ex vessel New York. 11.00
Canadian Apatite, lump, f. o. b. at Montreal, ℔ ton. 16.00
Phosphorus—℔ lb. 70@75
Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7
Potassium—Cyanide, ℔ lb. 39@40
Bromide, ℔ lb. 33
Chlorate, ℔ lb. 13@10
Carb. ℔ lb 4.70@5.54
Caustic, ℔ lb 7½@8
Iodide 2.65@2.70
Muriate, ℔ 100 lbs. 1.77½@1.80
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb. 10½@11
Sulphate, ℔ 100 lbs. 2.30@2.35
Yellow Prussiate, ℔ lb. 17½@18
Red Prussiate, ℔ lb. 42@45
Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2¼@2½
Pyrites—Non cupreous, p. units 10d
Quartz—Ground, ℔ ton. 14.00@16.00
Rotten Stone—Powdered, ℔ lb. 3¼@3½
Lump, ℔ lb 6@10
Salt—Liverpool, ground ℔ sack 75@80
Turk's Island, ℔ bush 25@28
Salt Cake—℔ lb. 60@62½
Saltpeter—Crude, ℔ lb. 5¼@5½
Refined, ℔ lb. 6@8
Soda Ash—Carb., 48 ℅ 100 ℔. 2¾
Caustic, 48 ℅ 2¼@2½
Soda Caustic, 60℅ 3.25@3.35
" 70℅ 3.00
" 74-76℅ 2¾
Sal, English, ℔ 100 lbs. 1½@1⅝
Sal, American, ℔ 100 lbs .90
Nitrate 100 lbs. 1.70
Strontium—Nitrate ℔ lb. 9@9½
Sulphur—Roll, ℔ lb. 1¼
Flour, ℔ lb 20
Crude Brimstone, 2s., ℔ ton. 19.00@19.20
Crude Brimstone, 3ds, ℔ ton. 18.50@18.70
Talc—Ground French, ℔ lb. 1¼@1½
Domestic, ℔ ton $18@$20
c. i. f. Liverpool, ℔ ton. £4 5
Vermillion—American, ℔ lb. 61
English, ℔ lb. 82@85
Vitriol—(Blue), Ordinary, ℔ lb. 5½@5⅝
Extra, ℔ lb. 7
Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 6@6¼
Paris, Red Seal, ℔ lb. 6¼@7
* Spot.

THE RARER METALS.

Aluminum—(Metallic), ℔ lb. $2.@$2.50
Sheet, per lb. 2.50
Arsenic—(Metallic), per lb. .40
Barium—(Metallic), per gram. $4.00
Bismuth—(Metallic), per lb. 2.75
Cadmium—(Metallic), per lb. 1.00
Calcium—(Metallic), per gram 10.00
Cerium—(Metallic), per gram. 7.50
Chromium—(Metallic), per gram 1.00
Cobalt—(Metallic), per lb. 6.00
Didymium—(Metallic), per gram 9.00
Erbium—(Metallic), per gram. 7.50
Gallium—(Metallic), per gram. 140.00
Glucinum—(Metallic) per gram. 12.00
Indium—(Metallic), per gram. 9.00
Iridium—(Metallic), per oz. 7.00
Lanthanum—(Metallic), per gr. 10.00
Lithium—(Metallic), per gram. 10.00
Magnesium—Per lb. 4.50
Manganese—Metallic, per lb. 1.10
Chem. pure, per oz. 10.00
Molybdenum—(Metallic), per gm. .50
Niobium—(Metallic), per gram. 5.00
Osmium—(Metallic), per oz. 65.00
Palladium—(Metallic), per oz. 35.00
Platinum—(Metallic), per oz. 9.00
Potassium—Metallic, per lb. 28.00
Rhodium—(Metallic), per gram. 5.00
Ruthenium—(Metallic), per gm. 5.50
Rubidium—(Metallic), per gram 2.00
Selenium—(Metallic), per oz. 1.80
Sodium—(Metallic) per lb. 2.50
Strontium—(Metallic), per gm. .60
Tantallum—(Metallic) per gram 9.00
Telurium—(Metallic) per lb. 5.00
Thallium—(Metallic) per gram. .25
Titanium—(Metallic) per gram. 2.25
Thorium—(Metallic) per gram. 17.00
Tungsten—(Metallic) per oz. 2.25
Uranium—(Metallic), per lb. 5.00
Vanadium—(Metallic), per gm. 22.00
Yttrium—(Metallic), per gram. 9.00
Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000 3.50@3.75
Jerseys, ℔ 1,000 5.50@7.00
Up Rivers, ℔ 1000 6 75@7.00
Haverstraw seconds, ℔ 1000 6.50@7.00
Haverstraw firsts, ℔ 1,000 7.00@7.75
Fronts, nominal, ℔ 1000.
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore
Building Stone—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft. 45@1.25
Granite, Scotch ℔ cu. ft. 1.00@1.15
Cement—Rosendale, ℔ bbl .85@1.10
Portland, American, ℔ bbl. 2 15@2.45
Portland, foreign, ℔ bbl. 2.30@2.40
Portland, " special brands. 2.45@2.75
Roman, ℔ bbl. 2.65@2.85
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.00@8.25
Slate—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black, roofing, ℔ 100 sq. ft. 4.25@5.50
Lime—Rockland, common ℔ bbl. 1.00
Rockland, finishing, ℔ bbl. 1.20
St. John, com. and finish, ℔ bbl. .90@.95
Glens Falls, com. and fin., ℔ bbl. .85@1.10
Labor—Ordinary, ℔ day. 1.50@2.00
Masons, ℔ day 4.00
Plasterers, ℔ day 4.00
Carpenters, ℔ day 3.50
Plumbers, ℔ day 3.50
Painters, ℔ day 2.50@3.50
Stonesetters, ℔ day 3.50@4.00
Tilelayers, ℔ day 3.50@4.50
Bricklayers, ℔ day 4.00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.